

=> FILE REG

FILE 'REGISTRY' ENTERED AT 15:01:37 ON 10 FEB 2009  
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=> DISPLAY HISTORY FULL L1-

FILE 'REGISTRY' ENTERED AT 11:49:02 ON 10 FEB 2009

E MOLYBDENUM TRIOXIDE/CN  
L1 1 SEA "MOLYBDENUM TRIOXIDE"/CN  
L2 4 SEA "MOLYBDENUM TRIOXIDE DIHYDRATE"/CN OR "MOLYBDENUM  
TRIOXIDE HEMIHYDRATE"/CN OR "MOLYBDENUM TRIOXIDE  
HYDRATE"/CN OR "MOLYBDENUM TRIOXIDE MONOHYDRATE"/CN  
L3 5 SEA L1 OR L2  
E MOLYBDENUM OXIDE/CN  
L4 3 SEA "MOLYBDENUM OXIDE"/CN  
L5 347 SEA (MO (L) O)/ELS (L) 2/ELC.SUB  
E PHOSPHORIC ACID/CN  
L6 1 SEA "PHOSPHORIC ACID"/CN  
E MAGNESIUM OXIDE/CN  
L7 1 SEA "MAGNESIUM OXIDE"/CN  
E CALCIUM OXIDE/CN  
L8 1 SEA "CALCIUM OXIDE"/CN  
E SODIUM OXIDE/CN  
L9 1 SEA "SODIUM OXIDE"/CN  
E MAGNESIUM CARBONATE/CN  
L10 1 SEA "MAGNESIUM CARBONATE"/CN  
E CALCIUM CARBONATE/CN  
L11 1 SEA "CALCIUM CARBONATE"/CN  
E SODIUM CARBONATE/CN  
L12 1 SEA "SODIUM CARBONATE"/CN

FILE 'HCA' ENTERED AT 11:59:19 ON 10 FEB 2009

L13 181862 SEA FERTILIZ? OR FERTILIS?  
L14 27702 SEA L3 OR (MOLYBDENUM# OR MO) (W)TRIOXIDE# OR MOO3  
L15 41217 SEA L4 OR L5 OR (MOLYBDENUM# OR MO) (W)OXIDE# OR MOO2 OR  
MOO4  
L16 163908 SEA L6 OR (PHOSPHORIC# OR ORTHOPHOSPHORIC#) (A)ACID# OR  
H3PO4  
L17 217741 SEA L7 OR (MAGNESIUM# OR MG) (W) (OXIDE# OR MONOXIDE#) OR  
MAGNESIA# OR MGO  
L18 177850 SEA L8 OR (CALCIUM# OR CA) (W) (OXIDE# OR MONOXIDE#) OR  
CALCIA# OR CAO  
L19 83643 SEA L9 OR (SODIUM# OR NA) (W)OXIDE# OR NA2O  
L20 21186 SEA L10 OR (MAGNESIUM# OR MG) (W)CARBONATE# OR MGCO3

L21 146909 SEA L11 OR (CALCIUM# OR CA) (W) CARBONATE# OR CaCO3  
L22 148680 SEA L12 OR (SODIUM# OR Na) (W) CARBONATE# OR Na2CO3  
L23 26 SEA L13 AND (L14 OR L15) AND L16  
L24 9 SEA L23 AND ((L17 OR L18 OR L19 OR L20 OR L21 OR L22))  
L25 174 SEA L13 AND (L14 OR L15)  
L26 63 SEA L25 AND ((L17 OR L18 OR L19 OR L20 OR L21 OR L22))  
L27 55 SEA L25 AND (L17 OR L18 OR L19)  
L28 24 SEA L25 AND (L20 OR L21 OR L22)  
L29 16 SEA L27 AND L28  
L30 QUE ?PHOSPHORIC? OR ?PHOSPHAT?  
L31 28 SEA L27 AND L30  
L32 49 SEA (L23 OR L28 OR L29 OR L31) NOT L24  
L33 22 SEA L27 NOT (L31 OR L32)  
L34 8 SEA 1808-2003/PY, PRY, AY AND L24  
L35 41 SEA 1808-2003/PY, PRY, AY AND L32  
L36 18 SEA 1808-2003/PY, PRY, AY AND L33

=> FILE HCA

FILE 'HCA' ENTERED AT 15:03:04 ON 10 FEB 2009

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=> D L34 1-8 CBIB ABS HITSTR HITIND RE

L34 ANSWER 1 OF 8 HCA COPYRIGHT 2009 ACS on STN

142:197277 Manufacture of a bio-release molybdenum **fertilizer**.

Varadachari, Chandrika (Department of Science & Technology DST, India). PCT Int. Appl. WO 2005014506 A2 20050217, 17 pp.

DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.

(English). CODEN: PIXXD2. APPLICATION: WO 2004-IN235 20040806.

PRIORITY: IN 2003-DE970 20030806.

AB A process for the prepn. of bio-release molybdenum

**fertilizers** comprises heating **molybdenum**

**trioxide** with Mg, Ca and/or **Na carbonates**

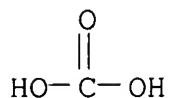
or oxides and **phosphoric acid** till a solid

polyphosphate is obtained, yielding a dry, free-flowing hygroscopic product. Pyrolusite is added during the manuf. process to remove the impurities in the raw materials.

IT 471-34-1, Calcium carbonate, biological studies 497-19-8, Sodium carbonate, biological studies 546-93-0, Magnesium carbonate 1305-78-8, Calcium oxide, biological studies 1309-48-4, Magnesium oxide, biological studies 1313-27-5, Molybdenum trioxide, biological studies 7664-38-2, Phosphoric acid, biological studies  
(reactant in manuf. of a bio-release molybdenum fertilizer)

RN 471-34-1 HCA

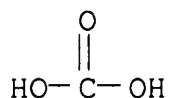
CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)



● Ca

RN 497-19-8 HCA

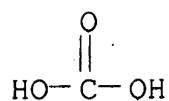
CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



●2 Na

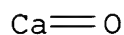
RN 546-93-0 HCA

CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)

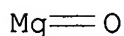


● Mg

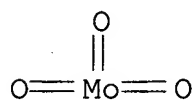
RN 1305-78-8 HCA  
CN Calcium oxide (CaO) (CA INDEX NAME)



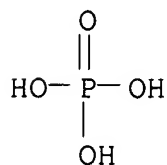
RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



RN 7664-38-2 HCA  
CN Phosphoric acid (CA INDEX NAME)



IC ICM C05G003-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST biorelease molybdenum **fertilizer** manuf  
IT **Fertilizers**  
(molybdenum; manuf. of a bio-release molybdenum  
**fertilizer**)  
IT 14854-26-3, Pyrolusite  
(in manuf. of a bio-release molybdenum **fertilizer**)



IT 7439-98-7, Molybdenum, biological studies  
 (manuf. of a bio-release molybdenum **fertilizer**)  
 IT **471-34-1, Calcium carbonate**, biological  
 studies **497-19-8, Sodium carbonate**,  
 biological studies **546-93-0, Magnesium**  
**carbonate 1305-78-8, Calcium**  
**oxide**, biological studies **1309-48-4,**  
**Magnesium oxide**, biological studies  
**1313-27-5, Molybdenum trioxide**,  
 biological studies **7664-38-2, Phosphoric**  
**acid**, biological studies  
 (reactant in manuf. of a bio-release molybdenum  
**fertilizer**)

RE

- (1) Anon; US 3762909 A HCA
- (2) Anon; US 4585751 A HCA
- (3) Anon; US 5433766 A HCA
- (4) Anon; WO 8100010 A1 HCA

L34 ANSWER 2 OF 8 HCA COPYRIGHT 2009 ACS on STN

137:185043 Comprehensive utilization for coal burning boiler smoke and  
 ash slag. Zhao, Shanmao; Zhang, Zhao; Xiao, Dazhuang (Zhao Shanmao,  
 Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN  
 1326912 A **20011219**, 32 pp. (Chinese). CODEN: CNXXEV.  
 APPLICATION: CN 2000-109011 20000602.

AB The title utilization method comprises: (1) converting S element in  
 the boiler smoke into H<sub>2</sub>SO<sub>4</sub> and sulfate **fertilizer**; (2)  
 vitrifying coal and coal dregs to obtain glass **fertilizer**,  
 rock wool fiber or construction materials such as insulation plate,  
 artificial wood, wall board, etc. The sulfate **fertilizer**  
 can be mixed with P **fertilizer**, glass **fertilizer**  
 , N **fertilizer**, K **fertilizer**, B  
**fertilizer** and functional glass **fertilizer**. The  
 method is low in toxicity and pollution.

IT **1305-78-8, Calcium oxide**, biological  
 studies **1309-48-4, Magnesium oxide (**  
**MgO)**, biological studies **1313-27-5,**  
**Molybdenum oxide (MoO<sub>3</sub>)**, biological  
 studies

(comprehensive utilization for coal burning boiler smoke and ash  
 slag)

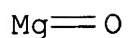
RN 1305-78-8 HCA

CN Calcium oxide (CaO) (CA INDEX NAME)

Ca=O

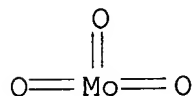
RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA

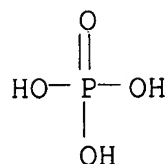
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IT **7664-38-2P, Phosphoric acid**, preparation  
(comprehensive utilization for coal burning boiler smoke and ash  
slag)

RN 7664-38-2 HCA

CN Phosphoric acid (CA INDEX NAME)



IC ICM C05G001-00

ICS C05D009-00; C05B011-08; C03C013-06; B09B003-00; B01D053-34

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 58, 60

ST boiler smoke fly ash **fertilizer** rock wool construction  
material

IT **Fertilizers**

(germanium and selenium-enriched glass **fertilizer**;  
comprehensive utilization for coal burning boiler smoke and ash  
slag)

IT **Fertilizers**

(sulfur; comprehensive utilization for coal burning boiler smoke  
and ash slag)

IT **Fertilizers**

(trace element; comprehensive utilization for coal burning boiler  
smoke and ash slag)

IT 1303-86-2, Boron oxide (B2O3), biological studies **1305-78-8**

, **Calcium oxide**, biological studies 1307-96-6,

Cobaltous oxide, biological studies 1308-38-9, Chromium oxide

(Cr2O3), biological studies 1309-37-1, Ferric oxide, biological

studies **1309-48-4, Magnesium oxide** (

**MgO**), biological studies **1313-27-5**,

**Molybdenum oxide (MoO<sub>3</sub>)**, biological studies 1313-99-1, Nickel oxide (NiO), biological studies 1314-13-2, Zinc oxide (ZnO), biological studies 1314-62-1, Vanadium oxide (V<sub>2</sub>O<sub>5</sub>), biological studies 1317-38-0, Cupric oxide, biological studies 1344-28-1, Alumina, biological studies 1344-43-0, Manganous oxide, biological studies 7440-56-4, Germanium, biological studies 7553-56-2, Iodine, biological studies 7631-86-9, Silica, biological studies 7782-49-2, Selenium, biological studies 18282-10-5, Tin oxide (SnO<sub>2</sub>)  
(comprehensive utilization for coal burning boiler smoke and ash slag)

IT **7664-38-2P, Phosphoric acid**, preparation  
(comprehensive utilization for coal burning boiler smoke and ash slag)

L34 ANSWER 3 OF 8 HCA COPYRIGHT 2009 ACS on STN  
128:216848 Original Reference No. 128:42965a,42968a Method of obtaining superabsorbent **fertilizers**. Beres, Janusz; Nowosielski, Olgierd; Irek, Joachim; Pecherczyk, Anna; Maslowska, Marzena; Gabrys, Jozef; Burkon, Zbigniew; Glados, Stanislaw; Durczynska, Danuta (Przedsiębiorstwo Produkcyjno-Handlowo-Uslugowe "Ekochem" Sa, Pol.). Pol. PL 172818 B1 **19971128**, 4 pp. (Polish).  
CODEN: POXXA7. APPLICATION: PL 1994-303578 19940523.

AB A hydrated gel material consisting of partially crosslinked copolymer of acrylic acid and N,N'-methylene-bis-acrylamide is reacted with oxides and hydroxides of K, Mg, Ca, Cu, Zn, Fe, Mn and Mo and subsequently mixed with Krylamine D foam in which had previously been incorporated **H<sub>3</sub>PO<sub>4</sub>**, H<sub>2</sub>SO<sub>4</sub> and H<sub>3</sub>BO<sub>3</sub>. Other agrochems. such as herbicides, pesticides and fungicides may be added.

IT **1305-78-8, Calcium oxide**, biological studies **1309-48-4, Magnesium oxide**, biological studies **7664-38-2, Phosphoric acid**, biological studies **18868-43-4, Molybdenum oxide**  
(method of obtaining superabsorbent **fertilizers**)

RN 1305-78-8 HCA

CN Calcium oxide (CaO) (CA INDEX NAME)

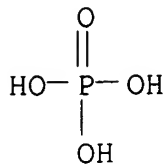
Ca=O

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

RN 7664-38-2 HCA  
 CN Phosphoric acid (CA INDEX NAME)



RN 18868-43-4 HCA  
 CN Molybdenum oxide (MoO<sub>2</sub>) (CA INDEX NAME)



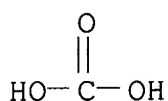
- IC ICM C05G003-04  
 ICS C09K017-22  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 ST superabsorbent **fertilizer**  
 IT **Fertilizers**  
 (method of obtaining superabsorbent **fertilizers**)  
 IT **1305-78-8, Calcium oxide**, biological studies **1309-48-4, Magnesium oxide**, biological studies 1310-58-3, Potassium hydroxide, biological studies 1314-13-2, Zinc oxide, biological studies 1317-38-0, Cupric oxide, biological studies 1344-43-0, Manganese oxide, biological studies 1345-25-1, Ferrous oxide, biological studies **7664-38-2, Phosphoric acid**, biological studies 7664-93-9, Sulfuric acid, biological studies 10043-35-3, Boric acid, biological studies **18868-43-4, Molybdenum oxide** 30280-72-9, Acrylic acid-N,N'-methylene-bis-acrylamide copolymer 149779-62-4, Krylamine D  
 (method of obtaining superabsorbent **fertilizers**)
- L34 ANSWER 4 OF 8 HCA COPYRIGHT 2009 ACS on STN  
 121:207970 Original Reference No. 121:37847a,37850a Development of a new route to oxamide from coal and ammonia. Okuwaki, Akitsugu; Okabe, Taijiro (Fac. Eng., Tohoku Univ., Sendai, 980, Japan). Trends in Inorganic Chemistry, 2, 145-58 (English) **1991**. CODEN: TIICEB.
- AB The prepn. of oxamide, a controlled-release nitrogen **fertilizer**, from coal and ammonia was studied. Optimum conditions for the oxidn. of coal in alk. solns. were detd. under which the yield of oxalic acid was  $\geq 90\%$ . The alkali-catalyzed oxygen-oxidn. mechanism was confirmed by the kinetics with model compds. Crude sodium oxalate contg. 6%

**sodium carbonate** was easily recovered from the oxidn. products. A phase diagram of the  $(\text{COONa})_2-(\text{NH}_4)_2(\text{HCO}_3)_2-\text{H}_2\text{O}$  system was constructed for the double decompn. reaction to obtain ammonium oxalate monohydrate from sodium oxalate. Acid catalysts promote thermal dehydration in the thermal decompn. of ammonium oxalate monohydrate to oxamide; the oxamide yield reached 86%.

IT **497-19-8P, Sodium carbonate**, preparation  
(manuf. of oxamide from ammonia and coal by oxidn. and double decompn. and thermal dehydration route)

RN 497-19-8 HCA

CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



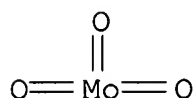
●2 Na

IT **1313-27-5, Molybdenum oxide** (**MoO<sub>3</sub>**), uses **7664-38-2, Phosphoric acid**, uses.

(manuf. of oxamide from ammonia and coal by oxidn. and thermal dehydration with phosphate salt catalysts)

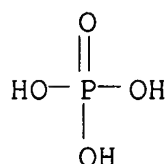
RN 1313-27-5 HCA

CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



RN 7664-38-2 HCA

CN Phosphoric acid (CA INDEX NAME)



CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 19, 23, 67

IT **497-19-8P, Sodium carbonate**, preparation  
(manuf. of oxamide from ammonia and coal by oxidn. and double

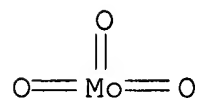
decompn. and thermal dehydration route)

- IT **1313-27-5, Molybdenum oxide** (**MoO<sub>3</sub>**), uses 1314-56-3, Phosphorus oxide (P<sub>2</sub>O<sub>5</sub>), uses 2466-09-3, Pyrophosphoric acid 7558-79-4, Sodium phosphate (Na<sub>2</sub>HPO<sub>4</sub>) **7664-38-2, Phosphoric acid**, uses 7722-76-1, Ammonium phosphate (NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub>) 7758-16-9, Sodium pyrophosphate (Na<sub>2</sub>H<sub>2</sub>P<sub>2</sub>O<sub>7</sub>) 7758-29-4, Sodium phosphate (Na<sub>5</sub>P<sub>3</sub>O<sub>10</sub>) 7778-77-0, Potassium phosphate (KH<sub>2</sub>PO<sub>4</sub>) 13813-62-2, Tetraphosphoric acid (H<sub>6</sub>P<sub>4</sub>O<sub>13</sub>) 50813-16-6, Sodium metaphosphate (manuf. of oxamide from ammonia and coal by oxidn. and thermal dehydration with phosphate salt catalysts)
- L34 ANSWER 5 OF 8 HCA COPYRIGHT 2009 ACS on STN  
107:76880 Original Reference No. 107:12645a,12648a Production of concentrated microfertilizer. Plyshevskii, S. V.; Gavrilyuk, N. I.; Bardinov, F. G.; Pechkovskii, V. V. (Belorussian Technological Institute, USSR; Belorussian Scientific-Research Institute of Soil Science and Agrochemistry). U.S.S.R. SU 1270148 A1 **19861115** From: Otkrytiya, Izobret. 1986, (42), 87. (Russian). CODEN: URXXAF. APPLICATION: SU 1984-3819742 19841205.
- AB Concd. microfertilizer is produced by mixing phosphate-contg. components with components which regulate the soly. of microfertilizers and with compds. of trace elements. The mixt. is heated to melting, and the melt is granulated and crushed. The temp. of the process is decreased and total nutrients in the **fertilizer** are retained by first mixing phosphate-contg. components and the components which regulate the soly. of the microfertilizer, at a 1:(0.42-0.66) wt. ratio, on acid wt., basis. The mixt. is heated to 550-880° and compds. of trace elements are added, at a melt/trace element compd. ratio of 1:(0.10-0.55). The melt is kept for 30-60 min and then granulated and crushed. The phosphate-contg. components are **H<sub>3</sub>PO<sub>4</sub>**, NaH<sub>2</sub>PO<sub>4</sub>, or KH<sub>2</sub>PO<sub>4</sub>. The components which regulate the soly. are NaNO<sub>3</sub>, NaH<sub>2</sub>PO<sub>4</sub>, K<sub>2</sub>CO<sub>3</sub>, KH<sub>2</sub>PO<sub>4</sub>, KCl, NaOH, KOH, K manganate, **CaCO<sub>3</sub>**, **CaO**, and Ca(OH)<sub>2</sub>. Compds. of trace elements are Cu oxide, ZnO, **Mo oxide**, Mn oxide, Co oxide, K manganate, Co molybdate, and Co cake.
- IC ICM C05G003-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST trace element phosphate **fertilizer**  
IT Trace elements, biological studies  
(**fertilizers** contg.)  
IT **Fertilizers**  
(phosphorus-trace element, manuf. of)  
IT 7439-96-5, Manganese, biological studies 7439-98-7, Molybdenum, biological studies 7440-48-4, Cobalt, biological studies 7440-50-8, Copper, biological studies 7440-66-6, Zinc, biological studies

(**fertilizer** contg.)  
 IT 7723-14-0P  
 (**fertilizers**, phosphorus-trace element, manuf. of)

L34 ANSWER 6 OF 8 HCA COPYRIGHT 2009 ACS on STN  
 84:88676 Original Reference No. 84:14500h,14501a Solid, clear,  
 water-soluble complete **fertilizer** mixture. (Krems.  
 Chemie-G.m.b.H., Austria). Austrian AT 326160 **19751125**, 4  
 pp. (German). CODEN: AUXXAK. APPLICATION: AT 1973-8669 19731011.  
 AB Complete trace element-contg. **fertilizers** were prepd. by  
 hot dissoln. of heavy metal compds. (oxides, hydroxides, or salts)  
 in **H3PO4**, neutralization of the acid with **Na2CO3**  
 , evapn. and transformation of the residue into a clear alkali-heavy  
 metal polyphosphate, which, after cooling, had a pH 0.2-8.8 (in 1%  
 soln.); the fused melt was ground and mixed with N-P-K and/or the  
**fertilizer** salts, vitamins, growth regulators, and nonmetal  
 trace elements. The heavy metal content of the alkali-heavy metal  
 polyphosphate was 0.1-9 wt.% calcd. on the metal oxide basis. Thus,  
 a mixt. of Zn, Fe, Mn, Cu, Ni, Co, etc. (5 g as oxides, carbonates,  
 or other salts) is dissolved by heating in 376 g 75% **H3PO4**  
 , 100 ml H2O is added, and the soln. is neutralized with 148 g  
**Na2CO3**. After preliminary evapn., the green-blue soln. is  
 transferred into a Pt dish and further evapd. at increased temp.;  
 the evapn. during the last hr is carried out at 800°. The  
 melt is spread over a cooled steel plate. The solidified melt is  
 green, glasslike, and clear. The fused mass is fine-ground and  
 mixed with polyphosphates, NH4H2PO4, and N- and K-contg. compds. in  
 required ratios. A 40% soln. of the prepd. mixt. is at the  
 beginning clear, but an amorphous ppt. appears in it when the soln.  
 is kept for a few days at 5°.

IT **1313-27-5**, reactions  
 (with **phosphoric acid**, in complex  
**fertilizer** manuf.)  
 RN 1313-27-5 HCA  
 CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IC C05G  
 CC 19-5 (Fertilizers, Soils, and Plant Nutrition)  
 Section cross-reference(s): 49  
 ST complex **fertilizer** clear solid manuf; trace element  
 phosphate **fertilizer**  
 IT **Fertilizers**  
 (complex, contg. metal phosphates, manuf. of solid, clear, and

- water-sol.)
- IT Trace elements  
(**fertilizers** contg., manuf. of complex, solid, clear,  
and water-sol.)
- IT Metals, reactions  
(heavy, with **phosphoric acid** in complex  
**fertilizer** manuf.)
- IT Polyphosphoric acids  
(metal salts, complex **fertilizers** contg., manuf. of  
solid, clear, and water-sol.)
- IT 7439-96-5, biological studies 7440-02-0, biological studies  
7440-48-4, biological studies 7440-50-8, biological studies  
7440-66-6, biological studies  
(**fertilizers** contg., manuf. of complex, solid, clear,  
and water-sol.)
- IT 598-62-9  
(reaction with **phosphoric acid**, in complex  
**fertilizer** manuf.)
- IT 10124-43-3  
(with **phosphoric acid**, in complex  
**fertilizer** manuf.)
- IT 1309-38-2, reactions **1313-27-5**, reactions 1314-13-2,  
reactions 1317-38-0, reactions  
(with **phosphoric acid**, in complex  
**fertilizer** manuf.)

L34 ANSWER 7 OF 8 HCA COPYRIGHT 2009 ACS on STN

57:51348 Original Reference No. 57:10270d-g Granulated compound  
**fertilizers** from lime, nitrogen, magnesium phosphate, and  
potassium salts. Nagai, Shoichiro; Fujiya, Junichi; Tokutake,  
Hisaharu (Yokohama Natl. Univ.). Kogyo Kagaku Zasshi, 62, 681-3  
(Unavailable) **1959**. CODEN: KGKZA7. ISSN: 0368-5462.

AB The authors tried to make the special compd. **fertilizers**  
by using Mg phosphate, lime, nitrogen, and a potassium salt (KCl or  
K<sub>2</sub>SO<sub>4</sub>): They found that a retarding effect by the basic  
**fertilizer** of P availability in the soil can be excluded by  
using this Mg phosphate. In the case of mixing KCl as the K salt,  
the **fertilizer** samples granulated by Ca(NO<sub>3</sub>)<sub>2</sub> or MgCl<sub>2</sub>  
soln. were detd. to be effective to prohibit the change of cyanamide  
to dicyan diamide. But in the case of mixing K<sub>2</sub>SO<sub>4</sub> as the K salt,  
the prohibition of cyanamide to dicyandiamide by Ca(NO<sub>3</sub>)<sub>2</sub> soln. was  
seen not to be effective. These facts are to be explained that in  
the case of KCl, free water is fixed by the formation of double salt  
(e.g., x Ca(NO<sub>3</sub>)<sub>2</sub>.y KCl.z H<sub>2</sub>O), and in the case of K<sub>2</sub>SO<sub>4</sub>, this  
double salt is not formed. The addn. of **MoO<sub>3</sub>** or B<sub>2</sub>O<sub>3</sub> to  
these granulated compd. **fertilizers** as the trace  
**fertilizing** element, was detd. to bring no bad effect to the  
product (e.g. the deterioration of citric acid soly. of



**phosphoric acid** or increasing of hygroscopicity of granulated product). The citric acid (2%) soly. of **phosphoric acid** and **MgO** were both about 97-98%, and did not decrease in the storing of few months.

CC 61 (Plant Nutrition, Soils, and Fertilizers)

IT Lime

(**fertilizers** from Mg phosphate, N, K salts and)

IT **Fertilizers**

(from lime, Mg phosphate, N and K salts)

IT 10043-83-1, Magnesium phosphate

(**fertilizers** from **CaO**, N, K salts and)

L34 ANSWER 8 OF 8 HCA COPYRIGHT 2009 ACS on STN

10:846 Original Reference No. 10:159e-i,160a-d Report on testing chemical reagents. Rather, J. B. Journal of the Association of Official Agricultural Chemists, 1, 317-29 (Unavailable) **1915**. CODEN: JOACAZ. ISSN: 0095-9111.

AB The purity and strength of crude NaOH, molybdic acid, com. citric acid, and ethyl ether have been studied in regard to their suitability for the detn. of N, **phosphoric acid**, insol. **phosphoric acid**, and ether ext., resp.

(I). Four methods were used for the detn. of carbonate in crude NaOH. (I) Krauch-Merck, (2) Sutton, (3) Sutton, by pptn. as BaCl<sub>2</sub> and (4) the following modification by the referee: Dissolve 2 g. crude NaOH in H<sub>2</sub>O and titrate with approx. 2 N HCl and phenolph. until the color fades. To another 2 g. portion add 0.5 cc. less of the 2 N acid, and titrate with 0.2 N acid until the color fades; read the buret, add 2 or 3 drops Me orange, and titrate until the color changes. The number of cc. 0.2 N acid required to change the Me orange + 1.06 gives the % **Na<sub>2</sub>CO<sub>3</sub>**. All samples tested but 1 contained more than 90% NaOH. Methods (1) and (2) give discordant results both from duplicate detns. and by the 2 methods. Further study of method (4) and of the amt. of **Na<sub>2</sub>CO<sub>3</sub>** which causes frothing in the N detns. is desirable before a limit is set. (II) Conditions affecting the detn. of N in NaOH. (A) Effect of the amt. of NaOH on the apparent N. Two methods were used: (1) Put 100 g. NaOH into a Kjeldahl flask with a little granulated Zn and distil into a receiver containing 5 cc. 0.2 N HCl. Titrate the excess acid with 0.1 N NH<sub>4</sub>OH and cochineal. (2) Same as (1) except that 40 g. NaOH are used. Method (1) gives too high results as some of the NaOH is carried over mechanically. (B) Effect of the addition of H<sub>2</sub>SO<sub>4</sub> on the apparent N. H<sub>2</sub>SO<sub>4</sub> had no effect on the results when 40 g. NaOH were used and its use is therefore unnecessary. (C) Effect of redistn. of distillate on the apparent N. Differences in results were small and within the limits of error, but this point should be studied further. (III) Molybdic acid. (A) Methods for detn.: (1) Krauch-Merck, (2) referee's modification of (1). Dissolve 0.5 g. molybdic acid (H<sub>2</sub>MoO<sub>4</sub>)? in 50

cc. H<sub>2</sub>O and 1 cc. NH<sub>4</sub>OH, heat gently, filter if necessary, acidulate with 5 cc. HOAc, dil. with 200 cc. H<sub>2</sub>O, heat to boiling and add a filtered soln. of 1.5 g. lead acetate in 20 cc. H<sub>2</sub>O. Boil several min., stirring constantly, allow to settle a minute or 2 and decant through a Gooch crucible. Wash by decantation 10 times, using 50 cc. boiling H<sub>2</sub>O each time, allowing about a min. to settle. Transfer the ppt. to the gooch, ignite, cool and weigh the ignited ppt. as PbMoO<sub>4</sub>. The factor 78.494 gives % **MoO<sub>3</sub>**. (3)

Referee. A volumetric method was tried but not found suitable.

Method (2) is much to be preferred over method (1), as it is much quicker (2 hrs. against 2 days). It is to be noted that "molybdic acid" in the official method probably means H<sub>2</sub>MoO<sub>4</sub> (85%), but that nearly half of the cooperators seem to be using **MoO<sub>3</sub>**. (B)

**Phosphoric acid** in molybdic acid. Total

**phosphoric acid, phosphoric acid**

in the official soln. and sulfates were detd. In only 2 cases was even a slight amt. of **phosphoric acid** found;

hence it appears that errors from this source are insignificant. No sulfates were found, but the effect of the sulfates should be studied further. (IV) Citric acid. The samples of citric acid were tested for ash, for oxalic, tartaric, and sulfuric acids, and for sugars. It appears that the purity of the samples of citric acid is quite sufficient for **fertilizer** control work. The subject should be studied further. (V) Ethyl ether. Four samples were examd. for matter non-volatile at 100°. Evap 100. 100 cc. in a tared Pt dish to dryness over a steam bath. Dry at 100° to constant wt. The amt. of non-volatile matter may introduce errors as high as 1.5%. The method used, together with the question of the presence of alc. and H<sub>2</sub>O and other possible impurities, should be studied further.

CC 7 (Analytical Chemistry)

=> D L35 1-41 CBIB ABS HITSTR HITIND

L35 ANSWER 1 OF 41 HCA COPYRIGHT 2009 ACS on STN

144:259993 Single-stage denitration. Mason, J. Bradley (Studsvik, Inc., USA). U.S. US 7011800 B1 20060314, 14 pp., Cont.-in-part of U.S. Ser. No. 185,616. (English). CODEN: USXXAM. APPLICATION: US 2002-246266 20020918. PRIORITY: WO 2000-US41323 20001019; US 2002-111148 20020419; US 2002-185616 20020628.

AB The present invention relates generally to a single step process for removing NO<sub>x</sub> compds. from wastes, products, compds. and wastewaters. More specifically, the invention relates to a single step process utilizing a fluidized bed contactor to remove NO<sub>x</sub> compds. from explosive, hazardous and/or radioactive materials. The present invention further relates to the conversion of alkali metals into a stable mineral form. A system and method using superheated steam

optionally augmented by oxygen for the redn. of nitrogen oxides present for reducing nitrogen oxides present in a wide variety of org. compds. The system includes a single reaction vessel, or optionally, multiple reaction vessels in operational communication. Redn. takes place quickly when a steam/oxygen mixt. is injected into the reaction vessel or vessels. Reducing additives are metered into the reaction vessel or vessels and/or provide energy input to reduce nitrates to nitrogen. The oxygen, when used, allows for some oxidn. of waste byproducts and provides an addnl. offset for thermal requirements of operation.

IT **1309-48-4, Magnesia, reactions**  
 (as fluidized bed material; single-stage steam-reforming denitration process utilizing fluidized bed contactor to remove nitrogen oxide compds. from explosive, hazardous and/or radioactive materials)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

IT **11098-99-0, Molybdenum oxide**  
 (single-stage steam-reforming denitration process utilizing fluidized bed contactor to remove nitrogen oxide compds. from explosive, hazardous and/or radioactive materials)

RN 11098-99-0 HCA

CN Molybdenum oxide (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

INCL 423239100; 423235000

CC 61-2 (Water)

Section cross-reference(s): 50, 59, 60

IT **Fertilizers**

Organic compounds, processes

(treatment of; single-stage steam-reforming denitration process utilizing fluidized bed contactor to remove nitrogen oxide compds. from explosive, hazardous and/or radioactive materials)

IT **1309-48-4, Magnesia, reactions**  
 (as fluidized bed material; single-stage steam-reforming denitration process utilizing fluidized bed contactor to remove nitrogen oxide compds. from explosive, hazardous and/or radioactive materials)

IT 57-50-1, Sugar, reactions 7429-90-5D, Aluminum, compds.  
 7439-95-4D, Magnesium, compds. 7440-21-3D, Silicon, compds.  
 7440-70-2D, Calcium, compds. 7722-84-1, Hydrogen peroxide,  
 reactions 7782-44-7, Oxygen, reactions 14265-44-2D,

**Phosphate, compds.**

(single-stage steam-reforming denitration process utilizing fluidized bed contactor to remove nitrogen oxide compds. from

explosive, hazardous and/or radioactive materials)  
IT 814-91-5, Copper oxalate 1303-86-2, Boron oxide, uses 1307-96-6, Cobalt oxide, uses 1313-99-1, Nickel oxide, uses 1332-37-2, Iron oxide, uses 1344-70-3, Copper oxide 3251-23-8 7439-89-6, Iron, uses 7439-89-6D, Iron, compds. 7439-98-7, Molybdenum, uses 7439-98-7D, Molybdenum, compds. 7440-02-0, Nickel, uses 7440-02-0D, Nickel, compds. 7440-06-4, Platinum, uses 7440-06-4D, Platinum, compds. 7440-42-8, Boron, uses 7440-42-8D, Boron, compds. 7440-45-1, Cerium, uses 7440-45-1D, Cerium, compds. 7440-48-4, Cobalt, uses 7440-48-4D, Cobalt, compds. 7440-50-8, Copper, uses 7440-50-8D, Copper, compds. 10141-05-6, Cobalt nitrate **11098-99-0, Molybdenum oxide** 11129-18-3, Cerium oxide 11129-89-8, Platinum oxide 13138-45-9, Nickel nitrate 18130-42-2, Cobalt oxalate 20543-06-0, Nickel oxalate  
(single-stage steam-reforming denitration process utilizing fluidized bed contactor to remove nitrogen oxide compds. from explosive, hazardous and/or radioactive materials)

L35 ANSWER 2 OF 41 HCA COPYRIGHT 2009 ACS on STN

142:218417 Safe treatment of waste propellants and waste explosives and production of components for **fertilizer** therefrom. Jang, Min Seon; Park, Ju Eun; Park, Su Beom (Dong Woon Specialty Chemical Co., Ltd., S. Korea; Dongin Chemical Co., Ltd.). Repub. Korean Kongkae Taeho Kongbo KR 2003043875 A **20030602**, No pp. given (Korean). CODEN: KRXXA7. APPLICATION: KR 2003-29587 20030510.

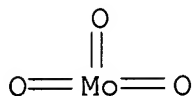
AB Provided is a method for treating waste propellants and explosives safely in a short time by mixing with yellow earth and hydrolyzing the mixt. in the presence of catalyst. Also, the hydrolyzed mixt. is neutralized for use as **fertilizer** components. The treatment method comprises the steps of: mixing waste propellants and explosives contg. nitrogen compds. with yellow earth having 5-30 wt.% of moisture and 0.02-0.05mm of size, in a wt. ratio of 1:0.1-2.0, and grinding; adding a catalyst selected from  $\text{CuSO}_4 \cdot x\text{H}_2\text{O}$ , **MoO3** and  $\text{CaSO}_4 \cdot x\text{H}_2\text{O}$ , and an aq. alkali soln. (pH10-14) such as NaOH or KOH; and hydrolyzing at 0-80°C. The waste propellants and explosives are one or more of nitrogen compd. selected from nitrocellulose, nitroglycerin, 2,4-dinitrotoluene, potassium nitrate, aliph. nitrate esters, etc. The above hydrolyzed mixt. is neutralized with HCl, HNO3 or **H3PO4** to adjust pH of the mixt. between pH5-9 for use as **fertilizer** components.

IT **1313-27-5, Molybdenum oxide (MoO3)**, uses

(prodn. of components for **fertilizer** from waste propellants and waste explosives)

RN 1313-27-5 HCA

CN Molybdenum oxide (MoO3) (CA INDEX NAME)

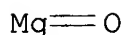


- IC ICM C05D009-00
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 60
- ST propellant explosive waste **fertilizer**
- IT Nitrates, biological studies  
(esters; prodn. of components for **fertilizer** from waste  
propellants and waste explosives)
- IT Solid wastes  
(military; prodn. of components for **fertilizer** from  
waste propellants and waste explosives)
- IT **Fertilizers**  
(prodn. of components for **fertilizer** from waste  
propellants and waste explosives)
- IT Soils  
(yellow; prodn. of components for **fertilizer** from waste  
propellants and waste explosives)
- IT 55-63-0, Nitroglycerin 121-14-2, 2,4-Dinitrotoluene 7757-79-1,  
Potassium nitrate, biological studies 9004-70-0, Nitrocellulose  
(prodn. of components for **fertilizer** from waste  
propellants and waste explosives)
- IT 1310-58-3, Potassium hydroxide (K(OH)), uses 1310-73-2, Sodium  
hydroxide (Na(OH)), uses **1313-27-5, Molybdenum  
oxide (MoO3)**, uses 7758-98-7, Copper sulfate  
(CuSO4), uses 22879-15-8, Calcium sulfate (CaSO4) hydrate  
(prodn. of components for **fertilizer** from waste  
propellants and waste explosives)

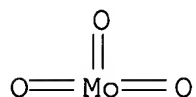
- L35 ANSWER 3 OF 41 HCA COPYRIGHT 2009 ACS on STN
- 141:139775 Method for production of granulated **fertilizer**  
mixtures. Andreev, G. D.; Vergunov, V. N.; Donskikh, N. A.;  
Shelud'ko, V. V.; Mogilevskaya, E. M. (Russia). Russ. RU 2225382 C1  
20040310, No pp. given (Russian). CODEN: RUXXE7. APPLICATION: RU  
2002-124044 20020909.
- AB Granulated NPK and NP **fertilizer** mixts. are produced by  
mixing urea with one or more mineral or organomineral  
**fertilizers**, such as ammonium nitrate, ammonium sulfate,  
ammophos, diammonium **phosphate**, potassium chloride,  
potassium sulfate, ground phosphorite (flour), biohum, potassium  
humate, and peat. The content of urea in NPK **fertilizer**  
mixts. can range 0.1-99.9% and the N/P2O5/K2O wt. ratio can be  
(15-25) : (9-17) : (9-17); the N/P2O5 wt. ratio in NP

**fertilizer** mixt. can be (11-45) : (0.03-45). The 2 **fertilizer** mixts. may further contain one or more trace minerals (Mg, B, Mn, Co, Cu, Fe, Zn, Mo, Ni, Cr) as additives, such as talc, perlite, or carbon in amts. 0.1-0.3% and hydrophobic additive, such as polymethylhydroxysiloxane emulsion (GKZh-94) in amts. 0.04-0.4%. The prepd. mixts. are moistened to 1.0-3.0% water content and granulated in std. industrial rotary granulator, after which granules are sieved. The granulated **fertilizer** mixts. have good physicomach. characteristics. The static strength of the granules without reinforcing additive is 2.3-2.9 MPa and with the additive 3.1-3.9 MPa. The granules have 100% friability and low caking and dusting. The addn. of GKZh-94 decreases granule hygroscopicity and increases the hygroscopic point by 1.0-2.4%. Yield granules of desired size is 85-88%.

IT **1309-48-4, Magnesium oxide (MgO)**  
, biological studies **1313-27-5, Molybdenum trioxide**, biological studies  
(method for prodn. of granulated NPK and NP **fertilizer** mixts.)  
RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IC ICM C05C009-00  
ICS C05G001-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST NPK **fertilizer** urea granulation manuf  
IT Polysiloxanes, biological studies  
(Et hydrogen; method for prodn. of granulated NPK and NP **fertilizer** mixts.)  
IT **Fertilizers**  
(ammonium **phosphate**, Ammophos; method for prodn. of granulated NPK and NP **fertilizer** mixts.)  
IT Granulation  
Peat  
(method for prodn. of granulated NPK and NP **fertilizer** mixts.)  
IT Perlite

**Phosphate rock**

(method for prodn. of granulated NPK and NP **fertilizer** mixts.)

IT **Fertilizers**

(nitrogen-phosphorus-potassium; method for prodn. of granulated NPK and NP **fertilizer** mixts.)

IT **Fertilizers**

(nitrogen-phosphorus; method for prodn. of granulated NPK and NP **fertilizer** mixts.)

IT Humic acids

(potassium salts; method for prodn. of granulated NPK and NP **fertilizer** mixts.)

IT 57-13-6, Urea, biological studies 1303-96-4, Borax

**1309-48-4, Magnesium oxide (MgO**

**), biological studies 1313-13-9, Manganese dioxide, biological studies 1313-27-5, Molybdenum trioxide**

**, biological studies 1314-13-2, Zinc oxide (ZnO), biological studies 6484-52-2, Ammonium nitrate, biological studies**

**7439-89-6, Iron, biological studies 7439-95-4, Magnesium,**

**biological studies 7439-96-5, Manganese, biological studies**

**7439-98-7, Molybdenum, biological studies 7440-02-0, Nickel,**

**biological studies 7440-09-7, Potassium, biological studies**

**7440-42-8, Boron, biological studies 7440-44-0, Carbon, biological studies 7440-47-3, Chromium, biological studies 7440-48-4,**

**Cobalt, biological studies 7440-50-8, Copper, biological studies**

**7440-66-6, Zinc, biological studies 7447-40-7, Potassium chloride**

**(KCl), biological studies 7722-64-7 7723-14-0, Phosphorus,**

**biological studies 7727-37-9, Nitrogen, biological studies**

**7758-99-8, Copper sulfate pentahydrate 7778-50-9, Potassium**

**bichromate 7778-80-5, Sulfuric acid dipotassium salt, biological**

**studies 7782-63-0, Ferrous sulfate heptahydrate 7783-20-2,**

**Ammonium sulfate, biological studies 7783-28-0, Diammonium**

**phosphate 7786-81-4, Nickel sulfate 7791-13-1**

**10043-35-3, Boric acid, biological studies 14807-96-6, Talc,**

**biological studies**

(method for prodn. of granulated NPK and NP **fertilizer** mixts.)

L35 ANSWER 4 OF 41 HCA COPYRIGHT 2009 ACS on STN

140:4552 Organomineral **fertilizer** comprising peat, urea, and a biocatalyst. Kasimova, L. V. (Sibirskii Nauchno-Issledovatel'skii Institut Torfa SO RASKhN, Russia). Russ. RU 2215718 C2

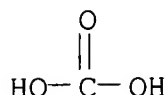
**20031110**, No pp. given (Russian). CODEN: RUXXE7.

APPLICATION: RU 1999-111341 19990525.

AB Organomineral **fertilizer** contains peat as a biol. active org. medium, urea, and, addnl., a biocatalyst comprising a peat-manure mixt., macro-, and microelements, in the following ratio of components, wt. %: urea 0.2-2.8; biocatalyst, 0.5-0.9; peat, the

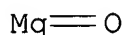
balance.

IT **497-19-8, Sodium carbonate**, biological studies **1309-48-4, Magnesium oxide**, biological studies  
 (biocatalyst component; organomineral **fertilizer** comprising peat, urea, and biocatalyst)  
 RN 497-19-8 HCA  
 CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



●2 Na

RN 1309-48-4 HCA  
 CN Magnesium oxide (MgO) (CA INDEX NAME)



IC ICM C05F011-02  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 ST organomineral **fertilizer** peat urea biocatalyst  
 IT Manure  
 (biocatalyst component; organomineral **fertilizer** comprising peat, urea, and biocatalyst)  
 IT **Phosphate** rock  
 Trace elements, biological studies  
 (biocatalyst component; organomineral **fertilizer** comprising peat, urea, and biocatalyst)  
 IT Peat  
 (organomineral **fertilizer** comprising peat, urea, and biocatalyst)  
 IT Enzymes, biological studies  
 (organomineral **fertilizer** comprising peat, urea, and biocatalyst)  
 IT **Fertilizers**  
 (organomineral; organomineral **fertilizer** comprising peat, urea, and biocatalyst)  
 IT **497-19-8, Sodium carbonate**, biological studies **1309-48-4, Magnesium oxide**, biological studies 7446-20-0, Zinc sulfate heptahydrate 7758-99-8, Copper sulfate pentahydrate 7782-63-0, Iron sulfate heptahydrate 7785-87-7, Manganese sulfate 7791-20-0, Nickel



chloride hexahydrate 10124-43-3, Cobalt sulfate 11098-84-3,  
 Ammonium **molybdenum oxide** 11105-06-9, Sodium  
 vanadium oxide 11130-18-0, Titanium chloride 11138-47-9, Sodium  
 perborate 39322-04-8, Chromium potassium oxide  
 (biocatalyst component; organomineral **fertilizer**  
 comprising peat, urea, and biocatalyst)

IT 57-13-6, Urea, biological studies  
 (organomineral **fertilizer** comprising peat, urea, and  
 biocatalyst)

L35 ANSWER 5 OF 41 HCA COPYRIGHT 2009 ACS on STN

139:350250 Preparation of magnetic composite **fertilizer**.

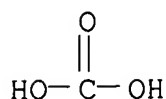
Yang, Hao (Nanjing Research Inst. of Soil, Chinese Academy of  
 Sciences, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai  
 Shuomingshu CN 1385404 A **20021218**, 16 pp. (Chinese).  
 CODEN: CNXXEV. APPLICATION: CN 2001-113615 20010515.

AB The title **fertilizer** contains common **fertilizer**  
 and magnetic substance. The magnetic substance may be one or more  
 of magnetite, pyrrhotite, ferrimagnet, ferrimanganic permanent  
 magnetic material, and RE permanent magnetic material. The ratio of  
 magnetic substance to ordinary **fertilizer** is 0.1-25:100.  
 The particle size of the magnetic substance is 0.01-0.16 mm. The  
 ordinary **fertilizer** may be from calcium  
**superphosphate**, concd. **superphosphate**, Ca-Mg-P  
**fertilizer**, calcium **phosphate**, defluorinated steel  
 slag **fertilizer**, calcium **metaphosphate**, ground  
 phosphorite, K<sub>2</sub>SO<sub>4</sub>, KCl, kiln ash K **fertilizer**, K-Mg  
**fertilizer**, K-Ca **fertilizer**, aminated calcium  
**superphosphate**, nitrated P **fertilizer**, ammonium  
**thiophosphate**, ammonium **phosphate**, K-P  
**fertilizer**, KNO<sub>3</sub>, K-P and K-N-P composite **fertilizer**  
 , lime, gypsum, MgSO<sub>4</sub>, MgCl<sub>2</sub>, **MgCO<sub>3</sub>**, **MgO**, S,  
 montroseite, (NH<sub>4</sub>)<sub>2</sub>Fe(SO<sub>4</sub>)<sub>2</sub>, FeSO<sub>4</sub>, chelated Fe, (NH<sub>4</sub>)<sub>2</sub>Mn(SO<sub>4</sub>)<sub>2</sub>,  
 MnCO<sub>3</sub>, MnCl<sub>2</sub>, MnO<sub>2</sub>, chelated Mn, ZnSO<sub>4</sub>, ZnCl<sub>2</sub>, ZnO, chelated Zn,  
 borax, H<sub>3</sub>BO<sub>3</sub>, CuSO<sub>4</sub>, Cu<sub>2</sub>O, chelated Cu, ammonium molybdate, sodium  
 molybdate and **MoO<sub>3</sub>**. The **fertilizer** is prepd. by  
 mixing the common **fertilizer** with magnetic substance.

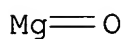
IT **546-93-0, Magnesium carbonate**  
**1309-48-4, Magnesium oxide (MgO**  
**)**, biological studies **1313-27-5, Molybdenum**  
**trioxide**, biological studies  
 (manuf. of magnetic substance-contg. composite **fertilizer**  
 )

RN 546-93-0 HCA

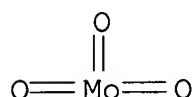
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)



RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IC ICM C05G003-00  
ICS H01F001-01  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST multinutrient **fertilizer** magnetic substance magnetite  
pyrrhotite maghemite  
IT **Fertilizers**  
(calcium-magnesium-phosphorus; manuf. of magnetic  
substance-contg. composite **fertilizer**)  
IT **Fertilizer** experiment  
Magnetic materials  
Oryza sativa  
Triticum aestivum  
(manuf. of magnetic substance-contg. composite **fertilizer**  
)  
IT Lime (chemical)  
**Phosphate** rock  
(manuf. of magnetic substance-contg. composite **fertilizer**  
)  
IT **Fertilizers**  
(multinutrient; manuf. of magnetic substance-contg. composite  
**fertilizer**)  
IT **Fertilizers**  
(nitrogen-phosphorus-potassium; manuf. of magnetic  
substance-contg. composite **fertilizer**)

- IT **Fertilizers**  
(nitrogen-potassium; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT **Fertilizers**  
(phosphorus, nitrated; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT **Fertilizers**  
(phosphorus-potassium; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT **Fertilizers**  
(potassium, kiln ash; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT **Fertilizers**  
(potassium-calcium; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT **Fertilizers**  
(potassium-magnesium; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT Slags  
(steelmaking, fluorine-removed; manuf. of magnetic substance-contg. composite **fertilizer**)
- IT **546-93-0, Magnesium carbonate**  
1066-97-3, Ammonium **dimethyldithiophosphate** 1303-96-4,  
Borax 1309-38-2, Magnetite, biological studies **1309-48-4**  
, **Magnesium oxide (MgO)**, biological  
studies 1310-50-5, Pyrrhotite **1313-27-5**,  
**Molybdenum trioxide**, biological studies  
1314-13-2, Zinc oxide, biological studies 1317-38-0, Copper oxide,  
biological studies 1317-39-1, Cuprous oxide, biological studies  
7439-89-6, Iron, biological studies 7439-96-5, Manganese,  
biological studies 7440-50-8, Copper, biological studies  
7440-66-6, Zinc, biological studies 7447-40-7, Potassium chloride,  
biological studies 7487-88-9, Magnesium sulfate, biological  
studies 7631-95-0, Sodium molybdate 7646-85-7, Zinc chloride,  
biological studies 7704-34-9, Sulfur, biological studies  
7720-78-7, Ferrous sulfate 7733-02-0, Zinc sulfate 7757-79-1,  
Potassium nitrate, biological studies 7758-23-8, Calcium  
**superphosphate** 7758-98-7, Cupric sulfate, biological  
studies 7778-77-0, Potassium dihydrogen **phosphate**  
7778-80-5, Potassium sulfate, biological studies 7786-30-3,  
Magnesium chloride, biological studies 10043-35-3, Boric acid  
(H<sub>3</sub>BO<sub>3</sub>), biological studies 10045-89-3, Ammonium ferrous sulfate  
10103-46-5, Calcium **phosphate** 10124-31-9, Ammonium  
**phosphate** 11098-84-3, Ammonium molybdate 11129-60-5,  
Manganese oxide 11132-78-8, Manganese chloride 12134-66-6,  
Maghemite 12420-00-7, Montroseite 13397-24-5, Gypsum, biological  
studies 14727-95-8, Ammonium manganese sulfate 17375-37-0,  
Manganese carbonate 53801-86-8, Calcium **metaphosphate**

- (manuf. of magnetic substance-contg. composite **fertilizer**)
- IT 13446-46-3, Ammonium **metaphosphate**  
(manuf. of magnetic substance-contg. composite **fertilizer**)
- L35 ANSWER 6 OF 41 HCA COPYRIGHT 2009 ACS on STN
- 139:245315 Complex glass-like slow-release **fertilizer**.  
Limbakh, I. Yu.; Karapetyan, G. O.; Karapetyan, K. G.; Kuznetsov, S. V.; Dokukina, A. F.; Smirnova, Z. A. (Russia). Russ. RU 2206552 C1 **20030620**, No pp. given (Russian). CODEN: RUXXE7.  
APPLICATION: RU 2001-135966 20011221.
- AB Complex slow-release **fertilizer** comprises a **phosphate** glass-like **fertilizer** consisting of a phosphorus-potassium-micronutrient **fertilizer** contg. P2O5, CaO, MgO, Fe2O3, MnO, CuO, B2O3, CoO, SiO2, MoO3, K2O; and an urea-formaldehyde resin consisting of a linear-cyclic polymethylene urea, in the following ratio of components, wt. %: **phosphate fertilizer**, 75-90%; urea resin, 10-25%.
- IC ICM C05B019-00  
ICS C05D001-00; C05C009-02; C05G001-00
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)
- ST **fertilizer** complex glass slow release phosphorus potassium micronutrient urea
- IT Agrochemical formulations  
(complex glass-like slow-release **fertilizer**)
- IT Aminoplasts  
(complex glass-like slow-release **fertilizer** contg.)
- IT **Fertilizers**  
(complex; complex glass-like slow-release **fertilizer**)
- IT **Fertilizers**  
(macronutrient; complex glass-like slow-release **fertilizer**)
- IT **Fertilizers**  
(phosphorus-potassium; complex glass-like slow-release **fertilizer**)
- IT **Fertilizers**  
(slow-release; complex glass-like slow-release **fertilizer**)
- IT **Fertilizers**  
(trace element; complex glass-like slow-release **fertilizer**)
- IT 7439-89-6, Iron, biological studies 7439-95-4, Magnesium, biological studies 7439-96-5, Manganese, biological studies 7439-98-7, Molybdenum, biological studies 7440-09-7, Potassium, biological studies 7440-21-3, Silicon, biological studies 7440-42-8, Boron, biological studies 7440-48-4, Cobalt, biological

studies 7440-50-8, Copper, biological studies 7440-70-2, Calcium, biological studies 7723-14-0, Phosphorus, biological studies

(complex glass-like slow-release **fertilizer** contg.)

IT 9011-05-6, Urea-formaldehyde resin

(complex glass-like slow-release **fertilizer** contg.)

L35 ANSWER 7 OF 41 HCA COPYRIGHT 2009 ACS on STN

134:71029 Preparation of **fertilizer** for sandy desertified land. Mou, Qingquan; Lan, Mou (Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1257855 A **20000628**, 14 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1999-117441 19991210.

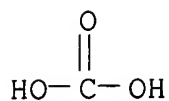
AB The **fertilizer** manuf. process comprises pulverizing **phosphate** rock, milling, mixing with H<sub>2</sub>SO<sub>4</sub>, ageing, and mixing with N **fertilizer**, K **fertilizer**, trace element and water-absorbing substance. The RE compd., Ca compd. and/or Mg compd. can be added to the **fertilizer** while milling, mixing, or ageing, and their addns. are 0.16-2.5, 1.5-40, and 1.5-40% resp. The ratio of aged product : N **fertilizer** : K **fertilizer** : trace element : water-absorbing substance is 45-60:22-40:8-14:0.05-0.5:1-10. The RE compd. is selected from LaCl<sub>3</sub>, La(NO<sub>3</sub>)<sub>3</sub>, La<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, La<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>, CeCl<sub>3</sub>, Ce<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, Ce<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>, etc.; the Ca compd. from **CaO**, Ca(NO<sub>3</sub>)<sub>2</sub>, CaSO<sub>4</sub>, CaCl<sub>2</sub>, **CaCO<sub>3</sub>**, Ca(OH)<sub>2</sub>, Ca(Ac)<sub>2</sub>, etc.; the Mg compd. from **MgO**, MgCl<sub>2</sub>, Mg(NO<sub>3</sub>)<sub>2</sub>, **MgCO<sub>3</sub>**, MgSO<sub>4</sub>, Mg(Ac)<sub>2</sub>, etc.; the N **fertilizer** from NH<sub>4</sub>Cl, NH<sub>4</sub>NO<sub>3</sub>, NH<sub>4</sub>HCO<sub>3</sub>, (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, or urea; the K **fertilizer** from KCl, KNO<sub>3</sub>, K<sub>2</sub>SO<sub>4</sub> or KH<sub>2</sub>PO<sub>4</sub>; the trace element **fertilizer** from ZnSO<sub>4</sub>, ZnO, ZnCO<sub>3</sub>, CuSO<sub>4</sub>, MnSO<sub>4</sub>, **MoO<sub>3</sub>**, borax, H<sub>3</sub>BO<sub>3</sub>, etc; and the water-absorbing substance from one or more of crosslinked acrylate, starch grafted acrylic acid, starch grafted acrylonitrile, CM-cellulose, poly(vinyl alc.)-acrylic acid graft polymer, mol. sieve or zeolite. The **fertilizer** can be used as soil amendment and it can improve fruit quality and quantity.

IT **471-34-1, Calcium carbonate**, biological studies **546-93-0, Magnesium carbonate** **1305-78-8, Calcium oxide**, biological studies **1309-48-4, Magnesium oxide**, biological studies **1313-27-5, Molybdenum trioxide**, biological studies

(manuf. of water-absorbing substance-contg. multinutrient **fertilizer** for sandy desertified land)

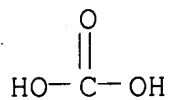
RN 471-34-1 HCA

CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)



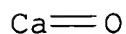
● Ca

RN 546-93-0 HCA  
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)

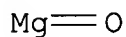


● Mg

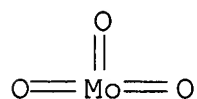
RN 1305-78-8 HCA  
CN Calcium oxide (CaO) (CA INDEX NAME)



RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



IC ICM C05G003-00  
ICS C05B011-08; C05D009-02; C05D011-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST multinutrient **fertilizer** sandy desertified land  
IT Molecular sieves  
Soil amendments

- (manuf. of water-absorbing substance-contg. multnutrient **fertilizer** for sandy desertified land)
- IT Limestone, biological studies
- Phosphate** rock
- Rare earth compounds
- Trace elements, biological studies
- Zeolites (synthetic), biological studies
- (manuf. of water-absorbing substance-contg. multnutrient **fertilizer** for sandy desertified land)
- IT **Fertilizers**
- (multnutrient; manuf. of water-absorbing substance-contg. multnutrient **fertilizer** for sandy desertified land)
- IT **Fertilizers**
- (nitrogen; manuf. of water-absorbing substance-contg. multnutrient **fertilizer** for sandy desertified land)
- IT **Fertilizers**
- (potassium; manuf. of water-absorbing substance-contg. multnutrient **fertilizer** for sandy desertified land)
- IT Soils
- (sandy, desertified; manuf. of water-absorbing substance-contg. multnutrient **fertilizer** for sandy desertified land)
- IT 57-13-6, Urea, biological studies 62-54-4, Calcium acetate 79-10-7D, Acrylic acid, crosslinked or starch grafted, biological studies 107-13-1D, Acrylonitrile, starch grafted 142-72-3, Magnesium acetate **471-34-1, Calcium carbonate**, biological studies 537-00-8, Cerium acetate 537-01-9, Cerium carbonate **546-93-0, Magnesium carbonate** 587-26-8, Lanthanum carbonate 917-70-4, Lanthanum acetate 1066-33-7, Ammonium bicarbonate 1303-96-4, Borax 1305-62-0, Calcium hydroxide, biological studies **1305-78-8, Calcium oxide**, biological studies 1308-56-1, Chalcopyrite, biological studies 1309-42-8, Magnesium hydroxide **1309-48-4, Magnesium oxide**, biological studies 1312-81-8, Lanthanum oxide 1313-13-9, Manganese dioxide, biological studies **1313-27-5, Molybdenum trioxide**, biological studies 1314-13-2, Zinc oxide, biological studies 3486-35-9, Zinc carbonate 6484-52-2, Ammonium nitrate, biological studies 7447-40-7, Potassium chloride, biological studies 7487-88-9, Magnesium sulfate, biological studies 7631-95-0, Sodium molybdate 7733-02-0, Zinc sulfate 7757-79-1, Potassium nitrate, biological studies 7758-98-7, Copper sulfate, biological studies 7773-01-5, Manganese chloride 7778-18-9, Calcium sulfate 7778-77-0, Potassium dihydrogen **phosphate** 7778-80-5, Potassium sulfate, biological studies 7783-20-2, Ammonium sulfate, biological studies 7785-87-7, Manganese sulfate 7786-30-3, Magnesium chloride, biological studies 7790-86-5, Cerium chloride 9002-89-5D, Poly(vinyl alcohol), acrylic acid graft 9004-32-4,

CM-cellulose 9005-25-8D, Starch, derivs., biological studies  
 10043-35-3, Boric acid, biological studies 10043-52-4, Calcium  
 chloride, biological studies 10099-58-8, Lanthanum chloride  
 10099-59-9, Lanthanum nitrate 10099-60-2, Lanthanum(III) sulfate  
 10124-37-5, Calcium nitrate 10377-60-3, Magnesium nitrate  
 11098-84-3, Ammonium molybdate 11129-18-3, Cerium oxide  
 11129-60-5, Manganese oxide 12125-02-9, Ammonium chloride,  
 biological studies 17309-53-4, Cerium nitrate 24670-27-7  
 (manuf. of water-absorbing substance-contg. multnutrient  
**fertilizer** for sandy desertified land)

L35 ANSWER 8 OF 41 HCA COPYRIGHT 2009 ACS on STN

134:71028 Preparation of **fertilizer** for alkaline saline soil.

Mou, Qingquan; Lan, Mou (Peop. Rep. China). Faming Zhuanli Shenqing  
 Gongkai Shuomingshu CN 1257854 A **20000628**, 14 pp.  
 (Chinese). CODEN: CNXXEV. APPLICATION: CN 1999-117442 19991210.

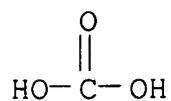
AB The **fertilizer** manuf. process comprises pulverizing  
**phosphate** rock, milling, mixing with H<sub>2</sub>SO<sub>4</sub>, ageing, and  
 mixing with N **fertilizer**, K **fertilizer** and rare  
 earth compds. The RE compd., Ca compd. and/or Mg compd. can be  
 added to the **fertilizer** while milling, mixing, or ageing,  
 and their addns. are 0.16-2.5, 1.5-40, and 1.5-40% resp. The ratio  
 of aged product : N **fertilizer** : K **fertilizer** :  
 trace element is 48-65:20-45:8-16:0.05-0.5. The RE compd. is  
 selected from LaCl<sub>3</sub>, La(NO<sub>3</sub>)<sub>3</sub>, La<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, La<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>, CeCl<sub>3</sub>,  
 Ce<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, Ce<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>, etc.; the Ca compd. from **CaO**,  
 Ca(NO<sub>3</sub>)<sub>2</sub>, CaSO<sub>4</sub>, CaCl<sub>2</sub>, **CaCO<sub>3</sub>**, Ca(OH)<sub>2</sub>, Ca(Ac)<sub>2</sub>, etc.; the  
 Mg compd. from **MgO**, MgCl<sub>2</sub>, Mg(NO<sub>3</sub>)<sub>2</sub>, **MgCO<sub>3</sub>**,  
 MgSO<sub>4</sub>, Mg(Ac)<sub>2</sub>, etc.; the N **fertilizer** from NH<sub>4</sub>Cl, NH<sub>4</sub>NO<sub>3</sub>,  
 NH<sub>4</sub>HCO<sub>3</sub>, (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, or urea; the K **fertilizer** from KCl,  
 KNO<sub>3</sub>, K<sub>2</sub>SO<sub>4</sub> or KH<sub>2</sub>PO<sub>4</sub>; and the trace element **fertilizer**  
 from ZnSO<sub>4</sub>, ZnO, ZnCO<sub>3</sub>, CuSO<sub>4</sub>, MnSO<sub>4</sub>, **MoO<sub>3</sub>**, borax, H<sub>3</sub>BO<sub>3</sub>,  
 etc. The **fertilizer** can amend soil and improve fruit  
 quality and quantity.

IT **471-34-1, Calcium carbonate**, biological  
 studies **546-93-0, Magnesium carbonate**  
**1305-78-8, Calcium oxide**, biological  
 studies **1309-48-4, Magnesium oxide**,  
 biological studies **1313-27-5, Molybdenum**  
**oxide (MoO<sub>3</sub>)**, biological studies  
 (manuf. of multnutrient **fertilizer** for alk. saline  
 soil)

RN 471-34-1 HCA

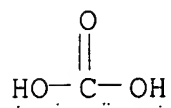
CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)





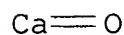
● Ca

RN 546-93-0 HCA  
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)

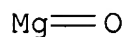


● Mg

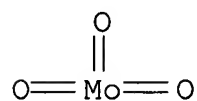
RN 1305-78-8 HCA  
CN Calcium oxide (CaO) (CA INDEX NAME)



RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



IC ICM C05G001-00  
ICS C05B011-08; C05D009-02; C05D011-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST multinutrient **fertilizer** alk saline soil  
IT Soils  
(alk. and saline; manuf. of multinutrient **fertilizer**)

- for alk. saline soil)
- IT Soil amendments  
(manuf. of multinutrient **fertilizer** for alk. saline soil)
- IT Limestone, biological studies  
**Phosphate** rock  
Trace elements, biological studies.  
(manuf. of multinutrient **fertilizer** for alk. saline soil)
- IT **Fertilizers**  
(multinutrient; manuf. of multinutrient **fertilizer** for alk. saline soil)
- IT **Fertilizers**  
(nitrogen; manuf. of multinutrient **fertilizer** for alk. saline soil)
- IT **Fertilizers**  
(potassium; manuf. of multinutrient **fertilizer** for alk. saline soil)
- IT Minerals, biological studies  
(rare earth; manuf. of multinutrient **fertilizer** for alk. saline soil)
- IT 57-13-6, Urea, biological studies 62-54-4, Calcium acetate  
142-72-3, Magnesium acetate **471-34-1, Calcium carbonate**, biological studies 537-00-8, Cerium acetate  
**546-93-0, Magnesium carbonate**  
587-26-8, Lanthanum carbonate 917-70-4, Lanthanum acetate  
1066-33-7, Ammonium bicarbonate 1303-96-4, Borax 1305-62-0,  
Calcium hydroxide, biological studies **1305-78-8, Calcium oxide**, biological studies 1308-56-1,  
Chalcopyrite, biological studies 1309-42-8, Magnesium hydroxide  
**1309-48-4, Magnesium oxide**, biological studies 1312-81-8, Lanthanum oxide 1313-13-9, Manganese dioxide,  
biological studies **1313-27-5, Molybdenum oxide (MoO3)**, biological studies 1314-13-2, Zinc  
oxide, biological studies 1317-38-0, Copper oxide, biological studies 1330-43-4, Sodium borate 1344-43-0, Manganese monoxide,  
biological studies 3486-35-9, Zinc carbonate 6484-52-2, Ammonium nitrate, biological studies 7447-40-7, Potassium chloride,  
biological studies 7487-88-9, Magnesium sulfate, biological studies 7631-95-0, Sodium molybdate 7733-02-0, Zinc sulfate  
7757-79-1, Potassium nitrate, biological studies 7773-01-5, Manganese chloride 7778-18-9, Calcium sulfate 7778-77-0,  
Potassium dihydrogen **phosphate** 7778-80-5, Potassium sulfate, biological studies 7783-20-2, Ammonium sulfate,  
biological studies 7785-87-7, Manganese sulfate 7786-30-3, Magnesium chloride, biological studies 7790-86-5, Cerium chloride  
10043-35-3, Boric acid, biological studies 10043-52-4, Calcium chloride, biological studies 10099-58-8, Lanthanum chloride

10099-59-9, Lanthanum nitrate 10099-60-2, Lanthanum(III) sulfate  
 10124-37-5, Calcium nitrate 10377-60-3, Magnesium nitrate  
 11098-84-3, Ammonium molybdate 11129-18-3, Cerium oxide  
 12125-02-9, Ammonium chloride, biological studies 13840-56-7,  
 Sodium borate 17309-53-4, Cerium nitrate 24670-27-7  
 (manuf. of multinutrient **fertilizer** for alk. saline  
 soil)

L35 ANSWER 9 OF 41 HCA COPYRIGHT 2009 ACS on STN

132:321478 Multinutrient long-acting **fertilizer**. Liu,  
 Chengcai (Peop. Rep. China). Faming Zhuanli Shenqing Gongkai  
 Shuomingshu CN 1203902 A **19990106**, 11 pp. (Chinese).  
 CODEN: CNXXEV. APPLICATION: CN 1998-103015 19980715.

AB The long-acting **fertilizer** is composed of hygroscopic  
 material 1-6%, dried fowl dung (or turf) 40-60%, urea 1-30%,  
 (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> 8-40%, NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> (or (NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub>) 10-32%, calcium  
**superphosphate** 10-40%, K<sub>2</sub>SO<sub>4</sub> (or KCl) 10-30%, and trace  
 element **fertilizer** 0.5-1.5%. The hygroscopic material is  
 selected from crosslinked acrylate copolymer, acrylic acid-grafted  
 starch, acrylonitrile-grafted starch polymer, CM-cellulose, acrylic  
 acid-polyvinyl alc. graft copolymer, mol. sieve, and/or zeolite.  
 The trace element **fertilizer** comprises Si-salt 0.01-1.5,  
 CoCl<sub>2</sub> 0.01-1, MgSO<sub>4</sub> and/or **MgO** 10-30, Cu-salt 0.02-2,  
 Zn-salt 2-6, Mn-salt 2-25, Mo-salt 0.01-5, Fe-salt 1-10, and B-salt  
 3-10%. The Si-salt is selected from one or more of SiO<sub>2</sub>, Na<sub>2</sub>SiO<sub>3</sub>,  
 ironmaking furnace slag, fly ash calcium silicate **fertilizer**  
 , and elec. furnace slag; the Cu-salt from one or more of  
 CuSO<sub>4</sub>·5H<sub>2</sub>O, CuSO<sub>4</sub>·H<sub>2</sub>O, and chalcopryrite; the Zn-salt  
 from one or more of ZnSO<sub>4</sub>·7H<sub>2</sub>O, ZnSO<sub>4</sub>·H<sub>2</sub>O, ZnO, and  
 ZnCO<sub>3</sub>; the Mn-salt from one or more of MnSO<sub>4</sub>, MnO, MnCl<sub>2</sub>, MnO<sub>2</sub>,  
 ammonium molybdate, sodium molybdate, and Mn<sub>2</sub>O<sub>3</sub>; the Fe-salt from  
 one or more of FeSO<sub>4</sub>·7H<sub>2</sub>O, FeSO<sub>4</sub>·4H<sub>2</sub>O, and  
 Fe(SO<sub>4</sub>)<sub>2</sub>·12H<sub>2</sub>O; and the B-salt from one or more of borax,  
 H<sub>3</sub>BO<sub>3</sub>, and sodium borate.

IT **1309-48-4, Magnesia**, biological studies  
**1313-29-7, Molybdenum sesquioxide**  
 (multinutrient long-acting **fertilizer**)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

RN 1313-29-7 HCA

CN Molybdenum oxide (Mo<sub>2</sub>O<sub>3</sub>) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C05G001-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST multinutrient **fertilizer** hygroscopic material  
 IT Feces  
 Hygroscopic substances  
 (multinutrient long-acting **fertilizer**)  
 IT **Fertilizers**  
 (multinutrient; multinutrient long-acting **fertilizer**)  
 IT **Fertilizers**  
 (trace element; multinutrient long-acting **fertilizer**)  
 IT 57-13-6, Urea, biological studies 1303-96-4, Borax 1308-56-1,  
 Chalcopyrite, biological studies **1309-48-4**,  
**Magnesia**, biological studies 1313-13-9, Manganese dioxide,  
 biological studies **1313-29-7**, Molybdenum sesquioxide  
 1314-13-2, Zinc oxide, biological studies 1344-09-8, Sodium  
 silicate 1344-43-0, Manganese monooxide, biological studies  
 3486-35-9, Zinc carbonate 7446-19-7, Zinc sulfate, monohydrate  
 7446-20-0, Zinc sulfate, heptahydrate 7447-40-7, Potassium  
 chloride, biological studies 7487-88-9, Magnesium sulfate,  
 biological studies 7631-86-9, Silicon dioxide, biological studies  
 7631-95-0, Sodium molybdate 7646-79-9, Cobalt chloride, biological  
 studies 7722-76-1, Ammonium dihydrogen **phosphate**  
 7758-23-8, Calcium **superphosphate** 7758-99-8, Copper  
 sulfate, pentahydrate 7773-01-5, Manganese chloride 7778-80-5,  
 Potassium sulfate, biological studies 7782-63-0, Ferrous sulfate,  
 heptahydrate 7783-20-2, Ammonium sulfate, biological studies  
 7783-28-0, Ammonium hydrogen **phosphate** 7785-87-7,  
 Manganese sulfate 10043-35-3, Boric acid, biological studies  
 10045-89-3, Ammonium ferrous sulfate 12027-67-7, Ammonium  
 molybdate 13840-56-7, Sodium borate 20908-72-9, Ferrous sulfate,  
 tetrahydrate  
 (multinutrient long-acting **fertilizer**)

L35 ANSWER 10 OF 41 HCA COPYRIGHT 2009 ACS on STN

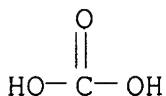
132:238921 Fibrous materials containing active substances for treatment  
 or purification of liquids. Oeste, Franz D.; Haas, Rainer  
 (Germany). PCT Int. Appl. WO 2000016877 A1 **20000330**, 86  
 pp. DESIGNATED STATES: W: AE, AL, AU, BA, BB, BG, BR, CA, CN, CR,  
 CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK,  
 LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT,  
 UA, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT,  
 BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR,  
 IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (German).  
 CODEN: PIXXD2. APPLICATION: WO 1999-EP6755 19990913. PRIORITY: DE  
 1998-19842528 19980918; DE 1998-19853158 19981118; DE 1998-19855646  
 19981202; DE 1999-19904670 19990204; DE 1999-19915177 19990403; DE  
 1999-19917399 19990416; DE 1999-19924742 19990531; DE 1999-19926180  
 19990609; DE 1999-19928460 19990624; DE 1999-19930764 19990705; DE  
 1999-19937853 19990813; DE 1999-19939901 19990822.

AB Fibrous materials (e.g., cellulose fibers) contg. particles and

active substances (e.g., adsorbents, complexing agents, flocculants, nutrients, biocides) for treatment or purifn. of liqs. (e.g., beverages, liq. foods, waters and wastewaters), comprise active substances which are coated or impregnated on the fibers or particles, distributed nonhomogeneously in a predetd. distribution. Addnl., either the active substance is not provided in another portion of the fibers or particles or is provided in a quantity which differs from the first predetd. proportion of the fibers or particles. The fibrous materials can be formed into filter paper or fiber filters. The active substances are first released when using the fibrous materials, becoming available for liq. treatment. In examples, the particles were activated C, chitosan or barite particles and the active substances were humic acids, alginic acid, Na alginate or FeCl<sub>3</sub> for water softening, heavy metals removal and water dechlorination.

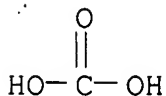
IT **471-34-1, Calcium carbonate, processes**  
**497-19-8, Sodium carbonate, processes**  
**546-93-0, Magnesium carbonate**  
**1313-27-5, Molybdenum oxide, processes**  
(fibrous materials contg. active substances for treatment or purifn. of liqs.)

RN 471-34-1 HCA  
CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)



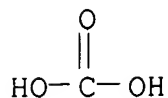
● Ca

RN 497-19-8 HCA  
CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



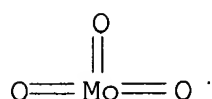
●2 Na

RN 546-93-0 HCA  
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)



● Mg

RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IC ICM B01D039-00  
ICS D21H027-08; D21H021-14; A23L002-52; A23L002-70; C02F001-00;  
D21H023-04  
CC 48-1 (Unit Operations and Processes)  
Section cross-reference(s): 11, 17, 43, 60, 61, 63  
IT Alkaline earth hydroxides  
Carbohydrates, processes  
Carbonaceous materials (technological products)  
Carbonates, processes  
Carboxylic acids, processes  
Enzymes, processes  
**Fertilizers**  
Fullerenes  
Glass, processes  
Glass microspheres  
Humic acids  
Hydroxides (inorganic)  
Metals, processes  
Oxides (inorganic), processes  
Phosphates, processes  
Plastics, processes  
Polyamines  
Polysaccharides, processes  
Proteins, general, processes  
Silicates, processes  
Trace elements, processes  
Vitamins  
Zeolites (synthetic), processes  
(fibrous materials contg. active substances for treatment or  
purifn. of liqs.)  
IT 50-99-7, D-Glucose, processes 409-21-2, Silicon carbide, processes

463-79-6D, Carbonic acid, alk. earth salts, processes  
**471-34-1, Calcium carbonate**, processes  
**497-19-8, Sodium carbonate**, processes  
**546-93-0, Magnesium carbonate**  
 584-08-7, Potassium carbonate 1305-62-0, Calcium hydroxide,  
 processes 1306-38-3, Cerium oxide, processes 1309-42-8,  
 Magnesium hydroxide 1310-53-8, Germanium oxide, processes  
 1313-13-9, Manganese oxide, processes **1313-27-5,**  
**Molybdenum oxide**, processes 1313-96-8, Niobium  
 oxide 1314-23-4, Zirconium oxide, processes 1314-35-8, Tungsten  
 oxide, processes 1314-61-0, Tantalum oxide 1332-37-2, Iron  
 oxide, processes 1333-74-0, Hydrogen, processes 1343-98-2,  
 Silicon hydroxide 1344-09-8, Water glass 1344-28-1, Aluminum  
 oxide, processes 7440-42-8, Boron, processes 7440-66-6, Zinc,  
 processes 7631-86-9, Silicon oxide, processes 7705-08-0, Ferric  
 chloride, processes 7782-44-7, Oxygen, processes 9002-18-0, Agar  
 9003-01-4, Polyacrylic acid 9004-34-6, Cellulose, processes  
 9005-32-7, Alginic acid 9012-76-4, Chitosan 11113-66-9, Iron  
 hydroxide 11138-66-2, Xanthan 12026-24-3, Tin hydroxide  
 12055-23-1, Hafnium oxide 12626-88-9, Manganese hydroxide  
 12651-23-9, Titanium hydroxide 12710-38-2, Niobium hydroxide  
 13462-86-7, Barite 13463-67-7, Titanium oxide, processes  
 14475-63-9, Zirconium hydroxide 15021-18-8, Germanium hydroxide  
 Ge(OH)<sub>4</sub> 18282-10-5, Tin oxide (SnO<sub>2</sub>) 21645-51-2, Aluminum  
 hydroxide, processes 37349-51-2, Tantalum hydroxide 37382-23-3,  
 Cerium hydroxide 39302-34-6, Platinum hydride 107477-35-0,  
 Tungsten hydroxide 126853-99-4, Molybdenum hydroxide  
 127211-73-8, Hafnium hydroxide  
 (fibrous materials contg. active substances for treatment or  
 purifn. of liqs.)

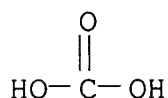
L35 ANSWER 11 OF 41 HCA COPYRIGHT 2009 ACS on STN

130:281406 Multi-effect inorganic-organic compound **fertilizer**.  
 Ding, Xinmin; Wang, Yanli; Zhong, Ming (Niute New Technology Co.,  
 Beijing, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai  
 Shuomingshu CN 1114299 A **19960103**, 15 pp. (Chinese).  
 CODEN: CNXXEV. APPLICATION: CN 1995-107433 19950707.

AB The multi-effect inorg.-org. compd. **fertilizer** is prepd.  
 by blending, stirring, crushing, and activating const., medium, and  
 micro nutrient elements and org. nutrient component to bar or  
 granular **fertilizer**. The total content of inorg. const.  
 nutrient element N, P, and K is  $\Phi > 27\%$ , and the mass ratio of  
 medium-micro nutrient element Mg, Na, B, Mo, Fe, Mn, Cu, Zn, Cl and  
 Co to const. element is 4-6%, and that of org. nutrient component to  
 inorg. nutrient element is 18-22%. The inorg. const. element is  
 composed of N 17-32, P 1.6- 5.2, and K 3.3-8.1%, and their  
 corresponding compds. were: N-2SO<sub>4</sub>, NH<sub>4</sub>NO<sub>3</sub>, urea and NH<sub>4</sub>Cl, P-P<sub>2</sub>O<sub>5</sub>,  
 (NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub>, and Ca superphosphate, and K-K<sub>2</sub>SO<sub>4</sub> and KCl. The inorg.

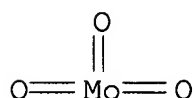
micro element is composed of Mg 0.1-2, Na 0.01- 0.54, B 0.02-0.23, Mo 0.01-0.1, Fe 0.04-0.53, Mn 0.10-0.66, Cu 0.001-0.08, Zn 0.04-0.3, Cl 0.01-0.05, and Co 0.0001-0.0006%, and their corresponding compds. were Mg-MgSO<sub>4</sub> and MgHPO<sub>4</sub>, Na- Na<sub>2</sub>SO<sub>4</sub> and **Na<sub>2</sub>CO<sub>3</sub>**, B-borax and H<sub>3</sub>BO<sub>3</sub>, Mo-2MoO<sub>4</sub>, Na<sub>2</sub>MoO<sub>4</sub> and **MoO<sub>3</sub>**, Fe-FeSO<sub>4</sub> and NH<sub>4</sub>FePO<sub>4</sub>, Mn-MnSO<sub>4</sub> and MnCl<sub>2</sub>, Cu-CuSO<sub>4</sub> and CuCl<sub>2</sub>, Zn- ZnSO<sub>4</sub> and ZnCl<sub>2</sub>, Cl-chloride and chlorate, and Co-CoSO<sub>4</sub> and CoCl<sub>2</sub>. The org. nutrient component is fowl and animal dung, or rejected material of slaughter house, or their mixt., which should be pretreated by treating under high-temp. and high- pressure to deodorize, sterilize and kill insect and egg, then adding org. soil **fertilizer**, stirring and crushing. The fowl and animal dung is chick dung, or pig, cow and sheep dung, and the rejected material of slaughter house is fowl and animal waste blood, hoof horn, bone, fur, meat, and residue in stomach of pig.

IT **497-19-8, Sodium carbonate**, biological studies **1313-27-5, Molybdenum trioxide**, biological studies  
(multi-effect inorg.-org. compd. **fertilizer**)  
RN 497-19-8 HCA  
CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



● 2 Na

RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



IC ICM C05G001-00  
ICS C05F003-00; C05F001-00  
CC 19-5 (Fertilizers, Soils, and Plant Nutrition)  
ST compd **fertilizer**  
IT Wastes  
(agricultural; multi-effect inorg.-org. compd. **fertilizer**)  
IT Blood  
Excretions



Feces

Nutrition, plant

Soil reclamation

(multi-effect inorg.-org. compd. **fertilizer**)

IT Trace elements, biological studies

(multi-effect inorg.-org. compd. **fertilizer**)

IT **Fertilizers**

(org.-inorg. compd.; multi-effect inorg.-org. compd.

**fertilizer**)

IT 57-13-6, Urea, biological studies **497-19-8, Sodium**

**carbonate**, biological studies **1313-27-5,**

**Molybdenum trioxide**, biological studies

1314-56-3, Phosphorus pentoxide, biological studies 1317-38-0,

Cupric oxide, biological studies 6484-52-2, Ammonium nitrate,

biological studies 7439-89-6, Iron, biological studies

7439-95-4, Magnesium, biological studies 7439-96-5, Manganese,

biological studies 7439-98-7, Molybdenum, biological studies

7440-09-7, Potassium, biological studies 7440-42-8, Boron,

biological studies 7440-48-4, Cobalt, biological studies

7440-50-8, Copper, biological studies 7440-66-6, Zinc, biological

studies 7440-70-2, Calcium, biological studies 7447-40-7,

Potassium chloride, biological studies 7487-88-9, Magnesium

sulfate, biological studies 7631-95-0, Sodium molybdate

7646-79-9, Cobalt chloride, biological studies 7646-85-7, Zinc

chloride, biological studies 7720-78-7, Ferrous sulfate

7723-14-0, Phosphorus, biological studies 7727-37-9, Nitrogen,

biological studies 7733-02-0, Zinc sulfate 7757-82-6, Sodium

sulfate, biological studies 7757-86-0, Magnesium hydrogen

phosphate 7758-23-8, Calcium superphosphate 7758-98-7, Cupric

sulfate, biological studies 7778-80-5, Potassium sulfate,

biological studies 7782-50-5, Chlorine, biological studies

7783-20-2, Ammonium sulfate, biological studies 7783-28-0,

Ammonium hydrogen phosphate 7785-87-7, Manganese sulfate

10043-35-3, Boric acid, biological studies 10124-43-3, Cobalt

sulfate 11098-84-3, Ammonium molybdate 11132-78-8, Manganese

chloride 12125-02-9, Ammonium chloride, biological studies

52767-99-4, Ammonium iron phosphate

(multi-effect inorg.-org. compd. **fertilizer**)

L35 ANSWER 12 OF 41 HCA COPYRIGHT 2009 ACS on STN

121:204379 Original Reference No. 121:37207a,37210a Slow-release

**fertilizer** and active synthetic soil. Ming, Douglas C.;

Golden, D. C.; Allen, Earl R.; Henninger, Donald L. (USA). PCT Int.

Appl. WO 9408896 A1 **19940428**, 25 pp. DESIGNATED STATES:

W: AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP,

KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK,

UA, US; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA,

GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG.

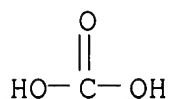
(English). CODEN: PIXXD2. APPLICATION: WO 1993-US9906 19931015.  
PRIORITY: US 1992-963348 19921016; US 1992-963349 19921016.

AB A synthetic soil/**fertilizer** for horticultural application having all the nutrients essential for plant growth is disclosed. The soil comprises a synthetic apatite **fertilizer** having sulfur, magnesium and micronutrients dispersed in a calcium **phosphate** matrix, a zeolite cation exchange medium satd. with a charge of potassium and nitrogen cations, and an optional pH buffer. Moisture dissolves the apatite and mobilizes the nutrient elements from the apatite matrix and the zeolite charge sites. Thus, a synthetic apatite compn. was prepd. by an inorg. replacement reaction by adding a soln. comprising Mg(NO<sub>3</sub>)<sub>2</sub> 13.499, Fe(NO<sub>3</sub>)<sub>2</sub>.6H<sub>2</sub>O 3.627, MnSO<sub>4</sub>.H<sub>2</sub>O 0.5408, Zn(NO<sub>3</sub>)<sub>2</sub> 0.5652 and Cu(NO<sub>3</sub>)<sub>2</sub>.2.5H<sub>2</sub>O 0.1464 g in 20 mL water to a soln. of (NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub> 43.32, (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub> 11.93, (NH<sub>4</sub>)Cl 1.011, H<sub>3</sub>BO<sub>4</sub> 0.779, (NH<sub>4</sub>)<sub>6</sub>Mo<sub>7</sub>O<sub>24</sub>.4H<sub>2</sub>O 0.00098, and (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> 2.4974 g in 0.5 L of 20 wt. % NH<sub>4</sub>OH in water; mixing vigorously for several seconds, and adding the resultant soln. to a soln. of Ca(NO<sub>3</sub>)<sub>2</sub>.4H<sub>2</sub>O 141.52 g in 0.5 L of 20 wt. % NH<sub>4</sub>OH in water. The mixt. was stirred vigorously for 5 min and then allowed to stand for 18 h to ppt. the product, which showed x-ray diffraction peaks corresponding to peaks for natural hydroxyapatites. After dissoln. of 0.5 g of the apatite compn. shaken in 80 mL water at pH 8.7 for 96 h, equil. ion concns. were P 1.33, Ca 13.6, Mg 29.8, and S 5.6 mg/L; DTPA-extractable Mn 121, Fe 244, Cu 6, and Zn 31 mg/kg; and B 4.4, Mo <0.02, and Cl 0.6 mg/L.

IT **497-19-8, Sodium carbonate**, uses  
(soly.-controlling agent, in slow-release **fertilizer** manuf.)

RN 497-19-8 HCA

CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



●2 Na

IC ICM C01B025-16

ICS C05B007-00; C05G005-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 49

ST **fertilizer** soil substitute synthetic apatite; zeolite  
synthetic apatite soil substitute

IT Smectite-group minerals

Zeolite-group minerals

- (cation-exchanged, in slow-release **fertilizer** manuf.)
- IT Soil substitutes
  - (manuf. of, by dispersion of nutrients in calcium **phosphate** matrix and admixt. of cation-exchanged zeolite)
- IT Mineral elements
  - (slow-release **fertilizer** contg. synthetic apatite and)
- IT Carbonates, uses
- Silicates, uses
  - (soly.-controlling agents, in slow-release **fertilizer** manuf.)
- IT Apatite-group minerals
  - (synthetic, prepn. and use as slow-release **fertilizer** and soil substitute of)
- IT Zeolites, uses
  - (A, cation-exchanged, in slow-release **fertilizer** manuf.)
- IT Zeolites, uses
  - (X, cation-exchanged, in slow-release **fertilizer** manuf.)
- IT Zeolites, uses
  - (cation-exchanged, in slow-release **fertilizer** manuf.)
- IT Trace elements, uses
  - (essential, slow-release **fertilizer** contg. synthetic apatite and)
- IT Minerals
  - (phyllosilicate, cation-exchanged, in slow-release **fertilizer** manuf.)
- IT **Fertilizers**
  - (slow-release, manuf. of, by dispersion of nutrients in calcium **phosphate** matrix and admixt. of cation-exchanged zeolite)
- IT 78-10-4, Ethyl orthosilicate 506-87-6, Ammonium carbonate 1318-00-9D, Vermiculite, cation-exchanged 1330-43-4, Sodium tetraborate 1332-77-0, Potassium tetraborate 3251-23-8, Copper nitrate (Cu(NO<sub>3</sub>)<sub>2</sub>) 7447-39-4, Copper chloride (CuCl<sub>2</sub>), uses 7447-40-7, Potassium chloride, uses 7646-85-7, Zinc chloride (ZnCl<sub>2</sub>), uses 7647-14-5, Sodium chloride, uses 7705-08-0, Ferric chloride, uses 7720-78-7, Ferrous sulfate 7722-64-7, Potassium permanganate 7733-02-0, Zinc sulfate 7757-82-6, Sodium sulfate, uses 7758-94-3, Ferrous chloride 7773-01-5, Manganese dichloride 7775-19-1, Sodium metaborate 7778-80-5, Potassium sulfate, uses 7779-88-6, Zinc nitrate 7783-20-2, Ammonium sulfate ((NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>), uses 7783-28-0, Ammonium **phosphate** ((NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub>) 7785-87-7, Manganese sulfate (MnSO<sub>4</sub>) 7786-30-3, Magnesium chloride, uses 7790-98-9, Ammonium perchlorate 7803-63-6, Ammonium bisulfate 10028-22-5, Ferric sulfate 10034-81-8, Magnesium perchlorate 10043-52-4, Calcium chloride (CaCl<sub>2</sub>), uses 10102-02-0, Zinc nitrite 10124-37-5, Calcium nitrate (Ca(NO<sub>3</sub>)<sub>2</sub>) 10137-74-3, Calcium chlorate 10192-29-7, Ammonium chlorate

- 10192-30-0, Ammonium bisulfite 10196-04-0, Ammonium sulfite  
 10294-64-1, Potassium manganate 10326-21-3, Magnesium chlorate  
 10377-60-3, Magnesium nitrate ( $\text{Mg}(\text{NO}_3)_2$ ) 10377-66-9, Manganese(II)  
 nitrate 10421-48-4, Ferric nitrate 12007-58-8, Ammonium  
 tetraborate 12027-67-7, Ammonium paramolybdate 12058-33-2,  
 Sodium paramolybdate 12125-02-9, Ammonium chloride ( $\text{NH}_4\text{Cl}$ ), uses  
 12173-10-3D, Clinoptilolite, cation-exchanged 12173-98-7D,  
 Mordenite, cation-exchanged 12174-18-4D, Phillipsite,  
 cation-exchanged 12251-32-0D, Chabazite, cation-exchanged  
 12339-22-9, Molybdenum **sodium oxide** ( $\text{Mo}_4\text{Na}_{20}\text{I}_3$ )  
 13709-94-9 13780-06-8, Calcium nitrite 14013-86-6, Iron nitrate  
 ( $\text{Fe}(\text{NO}_3)_2$ ) 14984-71-5 15070-34-5, Magnesium nitrite  
 15190-32-6, Molybdenum **sodium oxide** ( $\text{Mo}_3\text{Na}_{20}\text{I}_0$ )  
 15593-15-4, Copper chloride ( $\text{CuCl}_2$ ) 17097-12-0 18488-90-9,  
 Manganese nitrite 18488-91-0 18488-95-4 23488-13-3, Hydrazine  
**phosphate** 25156-16-5, Boric acid ( $\text{H}_3\text{BO}_3$ ) 37211-00-0,  
 Potassium molybdate 54390-90-8, Ammonium **hypophosphate**  
 57455-64-8 158115-20-9 158165-97-0, Ammonium **molybdenum**  
**oxide peroxide**  
 (in slow-release **fertilizer** manuf.)  
 IT 10103-46-5, Calcium **phosphate**  
 (pptn. of, in slow-release **fertilizer** manuf.)  
 IT 12167-74-7P, Calcium hydroxy **phosphate** ( $\text{Ca}_5(\text{OH})(\text{PO}_4)_3$ )  
 (prepn. and use as slow-release **fertilizer** and soil  
 substitute of)  
 IT 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5,  
 Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7,  
 Potassium, uses 7440-21-3, Silicon, uses 7440-23-5, Sodium, uses  
 7440-42-8, Boron, uses 7440-50-8, Copper, uses 7440-66-6, Zinc,  
 uses 7440-70-2, Calcium, uses 7704-34-9, Sulfur, uses  
 7723-14-0, Phosphorus, uses 16887-00-6, Chloride, uses  
 (slow-release **fertilizer** contg. apatite and)  
 IT 144-55-8, Sodium bicarbonate, uses 298-14-6, Potassium bicarbonate  
**497-19-8, Sodium carbonate**, uses  
 584-08-7, Potassium carbonate 1066-33-7, Ammonium bicarbonate  
 1344-09-8, Sodium silicate 6834-92-0, Sodium metasilicate  
 10006-28-7, Potassium metasilicate 12794-95-5, Ammonium silicate  
 13637-97-3, Potassium disilicate 13870-28-5, Sodium disilicate  
 15859-24-2, Sodium orthosilicate 16693-01-9  
 (soly.-controlling agent, in slow-release **fertilizer**  
 manuf.)  
 IT 14798-03-9, Ammonium, uses  
 (zeolite satd. with, in slow-release **fertilizer** manuf.)

L35 ANSWER 13 OF 41 HCA COPYRIGHT 2009 ACS on STN

116:146175 Original Reference No. 116:24577a,24580a Cellulose  
 beads-encapsulated agrochemicals, for sustained release. Bagi,  
 Albert; Farago, Jenő; Meiszel, László; Mergenthaler, Nándor; Vass,

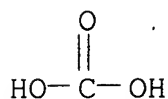
Barnabas (Magyar Viscosa Gyar, Hung.). Hung. Teljes HU 56479 A2  
**19910930**, 17 pp. (Hungarian). CODEN: HUXXB. APPLICATION:  
 HU 1990-368 19900126.

AB Pesticides and **fertilizers** are encapsulated into cellulose beads, for sustained release. Air was vacuumed out from 30 kg cellulose beads, followed by treatment of the beads with 25 dm<sup>3</sup> 24% oxamil, to give a sustained-release compn. Equipment for the process is presented.

IT **471-34-1, Calcium carbonate**, biological studies **546-93-0, Magnesium carbonate** (**fertilizer**, cellulose bead-encapsulated, for sustained release)

RN 471-34-1 HCA

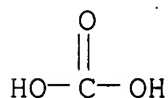
CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)



● Ca

RN 546-93-0 HCA

CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)



● Mg

IC ICM A01N025-10

CC 5-4 (Agrochemical Bioregulators)

Section cross-reference(s): 19

IT **Fertilizers**

(sustained-release, cellulose bead-encapsulated)

IT 57-13-6, Urea, biological studies **471-34-1**,

**Calcium carbonate**, biological studies

**546-93-0, Magnesium carbonate**

6484-52-2, Ammonium nitrate, biological studies 7722-76-1,

Monoammonium phosphate 7733-02-0, Zinc sulfate 7785-87-7,

Manganese sulfate 9011-05-6 10043-35-3, Boric acid, biological studies 11098-84-3, Ammonium **molybdenum oxide**

(**fertilizer**, cellulose bead-encapsulated, for sustained release)

L35 ANSWER 14 OF 41 HCA COPYRIGHT 2009 ACS on STN

116:20332 Original Reference No. 116:3589a,3592a Solid

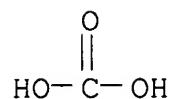
**fertilizer** for culturing ginseng. Jin, Guangyu; Qi, Anguo (Jilin Chemical Industry Corp., Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1052474 A **19910626**, 8 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1989-109288 19891211.

AB The title **fertilizer** contains isobutylidene diurea, Ge compds., and K **metaphosphate**. The **fertilizer** is highly effective and slow-release and may further contain trace elements, such as Zn, Mo, and Cu. Thus, a **fertilizer** was formulated contg. 3.87 kg isobutylidene diurea, 0.9 kg GeO, 6.01 kg K **metaphosphate**, 0.10 kg graphite, and 0.02 kg poly(vinyl alc.).

IT **471-34-1, Calcium carbonate**, biological studies **546-93-0, Magnesium carbonate 1305-78-8, Calcium oxide**, biological studies **1309-48-4, Magnesium oxide**, biological studies **1313-27-5, Molybdenum trioxide**, biological studies (**fertilizer** contg., for ginseng culturing)

RN 471-34-1 HCA

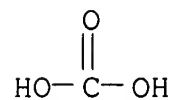
CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)



● Ca

RN 546-93-0 HCA

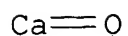
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)



● Mg

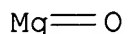
RN 1305-78-8 HCA

CN Calcium oxide (CaO) (CA INDEX NAME)



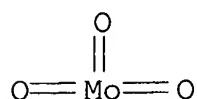
RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA

CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



IC ICM C05G001-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST ginseng **fertilizer** isobutylidenediurea germanium  
**metaphosphate**; urea isobutylidene germanium  
**metaphosphate fertilizer** ginseng

IT Ginseng  
(culturing of, **fertilizer** contg. isobutylidene diurea  
and germanium and potassium **metaphosphate** for)

IT **Fertilizers**  
(sustained-release, solid, isobutylidene diurea- and germanium-  
and potassium **metaphosphate**-contg., for ginseng  
culturing)

IT **471-34-1, Calcium carbonate**, biological  
studies **546-93-0, Magnesium carbonate**  
1303-96-4, Borax **1305-78-8, Calcium**  
**oxide**, biological studies **1309-48-4,**  
**Magnesium oxide**, biological studies 1310-53-8,  
Germanium oxide, biological studies **1313-27-5,**  
**Molybdenum trioxide**, biological studies  
1314-13-2, Zinc oxide, biological studies 1344-70-3, Copper oxide  
3486-35-9, Zinc carbonate 6104-30-9, Isobutylidene diurea  
7487-88-9, Magnesium sulfate, biological studies 7631-95-0, Sodium  
molybdate 7733-02-0, Zinc sulfate 7757-93-9, Calcium  
**hydrogenphosphate** 7758-98-7, Copper sulfate, biological  
studies 7779-88-6, Zinc nitrate 7785-87-7, Manganese sulfate  
7790-53-6, Potassium **metaphosphate** 9002-89-5, Poly(vinyl  
alcohol) 10043-35-3, Boric acid, biological studies 10124-37-5,  
Calcium nitrate 10377-60-3, Magnesium nitrate 11129-60-5,  
Manganese oxide 12027-67-7, Ammonium paramolybdate 17375-37-0,

Manganese carbonate

(**fertilizer** contg., for ginseng culturing)

L35 ANSWER 15 OF 41 HCA COPYRIGHT 2009 ACS on STN

114:100493 Original Reference No. 114:17135a,17138a Trace element

**fertilizers**. Nonomura, Tsutomu (Fertilizantes Mitsui S. A. Industria e Comercio, Brazil). Braz. Pedido PI BR 8905535 A **19900522**, 13 pp. (Portuguese). CODEN: BPXXDX.

APPLICATION: BR 1989-5535 19891030.

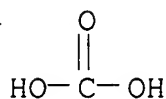
AB Trace element **fertilizers** are manufd. by heating mixts. contg. serpentinite, magnesite, limestone or feldspar, soda ash or slag, as well as Zn, B, Fe, Mn, Co and Mo in an elec. furnace, and then rapidly cooling. A mixt. was made of serpentinite 191, magnesite 39, limestone, 51, calamine 60, CuO 14, borax 91, hematite 20, ferromanganite 33 and **Mo trioxide** 1 kg, such as to contain Zn 5.0, B 24, Fe 4.0, Mn 2.5, Cu 1.3, and Mo 0.15%, with a **MgO/SiO2** ratio of 1.01 and a **CaO/SiO2** ratio of 0.24. The mixt. was heated in an elec. furnace (250 V; 150 A) and cooled rapidly to give a **fertilizer**. From this

IT **497-19-8**, Soda ash, biological studies **1313-27-5**,

**Molybdenum trioxide**, biological studies (in trace element **fertilizer** manuf.)

RN 497-19-8 HCA

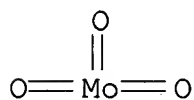
CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



●2 Na

RN 1313-27-5 HCA

CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IC ICM C05D009-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST trace element **fertilizer**

IT Slags

(in trace element **fertilizer** manuf.)

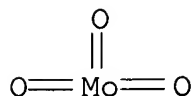


- IT Feldspar-group minerals  
Limestone, biological studies  
Serpentinite  
(in trace element **fertilizer** manuf.)
- IT **Fertilizers**  
(trace element, manuf. of, by heating serpentinite-contg. mixts.)
- IT **497-19-8**, Soda ash, biological studies 1303-96-4, Borax  
**1313-27-5, Molybdenum trioxide**,  
biological studies 1317-38-0, Copper oxide (CuO), biological  
studies 1317-60-8, Hematite, biological studies 12196-21-3,  
Calamine 13717-00-5, Magnesite  
(in trace element **fertilizer** manuf.)
- IT 7439-89-6, Iron, biological studies 7439-96-5, Manganese,  
biological studies 7439-98-7, Molybdenum, biological studies  
7440-42-8, Boron, biological studies 7440-50-8, Copper, biological  
studies 7440-66-6, Zinc, biological studies  
(trace element **fertilizer** contg.)
- L35 ANSWER 16 OF 41 HCA COPYRIGHT 2009 ACS on STN  
112:138173 Original Reference No. 112:23353a,23356a Influence of  
secondary nutrient elements (magnesium, sulfur) and some trace  
elements (boron, cobalt, copper, iron, manganese, molybdenum, zinc)  
on ryegrass (*Lolium multiflorum*) yield and quality depending on  
their chemical form and the accompanying ions. Dorneanu, A.;  
Bogdanescu, Victoria; Dorneanu, Emilia; Ilie, Gabriela (Inst.  
Cercet. Pedol. Agrochim., Bucharest, Rom.). Analele Institutului de  
Cercetari pentru Pedologie si Agrochimie, Academia de Stiinte  
Agricole si Silvice, 48, 203-10 (Romanian) **1988**. CODEN:  
AICAD3. ISSN: 0258-6959.
- AB Ryegrass yields increased by  $\leq 16\%$  following  
**fertilization** with nutrient-contg. compds. found in  
industrial or mining wastes (32 compds. evaluated). The greatest  
effects were obtained with sulfates, nitrates, and acid forms. Pos.  
effects on N assimilation were obsd. in many cases; the N content of  
the ryegrass increased from 2.87% of dry wt. controls to  
 $\leq 3.85\%$ .
- IT **1309-48-4, Magnesium oxide**, biological  
studies **1313-27-5, Molybdenum oxide** (  
**MoO<sub>3</sub>**), biological studies  
(**fertilizer** expt. with, with ryegrass, waste  
utilization in relation to)
- RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

RN 1313-27-5 HCA

CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



- CC 19-5 (Fertilizers, Soils, and Plant Nutrition)
- ST ryegrass magnesium sulfur micronutrient **fertilizer**; waste mineral trace element ryegrass; trace element waste **fertilizer** ryegrass
- IT Lolium multiflorum  
(**fertilizer** expt. with, with magnesium and sulfur and trace element compds. found in industrial and mining wastes)
- IT Trace elements, biological studies  
(**fertilizer** expt., with ryegrass)
- IT Mines and Mining  
(wastes from, magnesium and sulfur and trace element compds., **fertilizer** expt. with, with ryegrass)
- IT **Fertilizer** experiment  
(with magnesium and sulfur and trace element compds. of industrial or mining wastes, with ryegrass)
- IT Wastes  
(industrial, magnesium and sulfur and trace element compds. from, **fertilizer** expt. with, with ryegrass)
- IT 7439-95-4  
(**fertilizer** experiment, with magnesium and sulfur and trace element compds. of industrial or mining wastes, with ryegrass)
- IT 557-34-6, Zinc acetate 598-62-9, Manganese carbonate 1309-48-4, Magnesium oxide, biological studies 1313-27-5, Molybdenum oxide (MoO<sub>3</sub>), biological studies 1314-13-2, Zinc oxide, biological studies 1317-38-0, Copper oxide (CuO), biological studies 3251-23-8, Cupric nitrate 7000-29-5, Calcium magnesium carbonate 7447-39-4, Copper chloride (CuCl<sub>2</sub>), biological studies 7487-88-9, Magnesium sulfate, biological studies 7631-95-0, Sodium molybdate 7646-79-9, Cobalt chloride, biological studies 7646-93-7, Monopotassium sulfate 7705-08-0, Ferric chloride, biological studies 7720-78-7, Ferrous sulfate 7733-02-0, Zinc sulfate 7772-98-7, Sodium thiosulfate 7773-01-5, Manganese chloride (MnCl<sub>2</sub>) 7778-80-5, Dipotassium sulfate, biological studies 7779-88-6, Zinc nitrate 7782-91-4, Molybdic acid (H<sub>2</sub>MoO<sub>4</sub>) 7785-87-7, Manganese sulfate 7786-30-3, Magnesium chloride, biological studies 10045-89-3, Ammonium ferrous sulfate 10141-05-6, Cobalt nitrate 10377-60-3, Magnesium nitrate 12027-67-7, Ammonium paramolybdate 18939-61-2  
(**fertilizer** expt. with, with ryegrass, waste

utilization in relation to)

IT 7439-89-6, Iron, biological studies 7439-96-5, Manganese, biological studies 7439-98-7, Molybdenum, biological studies 7440-42-8, Boron, biological studies 7440-48-4, Cobalt, biological studies 7440-50-8, Copper, biological studies 7440-66-6, Zinc, biological studies 7704-34-9, Sulfur, biological studies  
(**fertilizer** expt., with ryegrass)

L35 ANSWER 17 OF 41 HCA COPYRIGHT 2009 ACS on STN

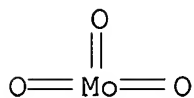
112:54314 Original Reference No. 112:9329a,9332a Production of polyphosphate complexes of trace elements. Glabisz, Urszula; Grzmil, Barbara (Inst. Technol. Chem., Politech. Szczecinskiej, Szczecin, Pol.). Zeszyty Problemowe Postepow Nauk Rolniczych, 325, 337-42 (Polish) **1989**. CODEN: ZPPRAW. ISSN: 0084-5477.

AB Decomn. of KCl with **H3PO4** at 350-500° in the presence of 0.5 mol CuSO4 or ZnSO4, or 0.25 mol **MoO3**/mol **H3PO4** prevented crystn. of the low-soly. Kurrol salt (KPO3)n by nitrification which provided for 100% P soly. in water. Decomn. at 350° in the presence of 0.1 mol MnSO4/mol **H3PO4** gave 100% soly. in 2% citric acid. CoSO4 at 0.2 mol/mol **H3PO4** at 350° gave better water and citric acid soly. than did lower concns. Small amts. of o-tripolyphosphates formed in the presence of all the trace metals. Cu addnl. induced also some pyrophosphates, whereas other metals also induced some linear polymd. phosphates (n <8).

IT **1313-27-5, Molybdenum oxide**, reactions  
(potassium chloride decomn. by **phosphoric acid**  
modification by, vitrification and solubilization in)

RN 1313-27-5 HCA

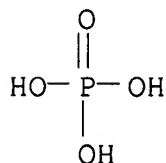
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IT **7664-38-2, Phosphoric acid**, reactions  
(potassium chloride decomn. by, vitrification and solubilization  
by **phosphoric acid** in)

RN 7664-38-2 HCA

CN Phosphoric acid (CA INDEX NAME)



- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)
- ST potassium polyphosphate trace metal complex **fertilizer**
- IT Trace elements, uses and miscellaneous  
(metals, potassium chloride decompn. by **phosphoric acid** modification by, vitrification and solubilization in)
- IT Trace elements, compounds  
(metals, potassium polyphosphate complexes, **fertilizers**, manuf. and vitreous structure and soly. of)
- IT **Fertilizers**  
(potassium polyphosphate-trace element complexes, manuf. of, vitrification and solubilization in)
- IT Polyphosphoric acids  
(potassium salts, formation of, in potassium chloride decompn. by **phosphoric acid** in presence of trace metals)
- IT 7447-40-7, Potassium chloride (KCl), reactions  
(decompn. of, by **phosphoric acid**, vitrification and solubilization by trace elements in)
- IT 7439-96-5DP, Manganese, complexes with potassium polyphosphates  
7439-98-7DP, Molybdenum, complexes with potassium polyphosphates  
7440-48-4DP, Cobalt, complexes with potassium polyphosphates  
7440-50-8DP, Copper, complexes with potassium polyphosphates  
7440-66-6DP, Zinc, complexes with potassium polyphosphates  
(**fertilizer**, manuf. and vitreous structure and soly. of)
- IT 10124-52-4D, trace element complexes  
(formation of, in potassium chloride decompn. by **phosphoric acid**)
- IT 29444-62-0D, trace element complexes  
(formation of, in potassium chloride decompn. by **phosphoric acid** in presence of trace metals)
- IT 7790-53-6  
(formation of, in potassium chloride decompn. by **phosphoric acid**, trace element effect on)
- IT 7733-02-0, Zinc sulfate 7758-98-7, Copper sulfate, reactions  
7785-87-7, Manganese sulfate 10124-43-3  
(potassium chloride decompn. by **phosphoric acid** modification by, vitrification and solubilization in)
- IT **1313-27-5, Molybdenum oxide**, reactions  
(potassium chloride decompn. by **phosphoric acid** modification by, vitrification and solubilization in)
- IT **7664-38-2, Phosphoric acid**, reactions  
(potassium chloride decompn. by, vitrification and solubilization by **phosphoric acid** in)

nitrosulfate **fertilizer** containing trace elements.

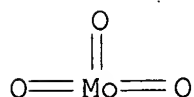
Rychnova, Alena; Rychna, Stanislav (Czech.). Czech. CS 234714 B1  
**19870301**, 6 pp. (Czech). CODEN: CZXXA9. APPLICATION: CS  
 1983-9868 19831223.

AB The **fertilizer** is prepd. by charging acid liquors contg.  
 Mo, H<sub>2</sub>SO<sub>4</sub>, and HNO<sub>3</sub> at -30 to +80° to a decompn. slurry for  
**fertilizer** manuf., after optional neutralization with  
 NH<sub>3</sub>(g), NH<sub>4</sub>OH, **Na<sub>2</sub>CO<sub>3</sub>**, NaOH, or KOH to pH 3-8.5. A 1000  
 kg mixt. of H<sub>2</sub>SO<sub>4</sub> 30, HNO<sub>3</sub> 13, and molybdic acid 4.05% (Mo content  
 2.4%) was added to 330 kg water in a stainless steel reactor at  
 60°. A 1000 kg acid portion was neutralized by using 147.7  
 kg NH<sub>3</sub>, to pH 4.5. The neutralized soln. contg. (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> 35.2,  
 NH<sub>4</sub>NO<sub>3</sub> 14.4, and NH<sub>4</sub> molybdate (2.79% Mo) 4.3% was fed into a  
 cascade of 5 neutralization U-shaped reactors for prodn. of the  
 nitrosulfate **fertilizer**. The Mo content in the  
**fertilizer** was 0.03%.

IT **1313-27-5**, biological studies  
 (in **fertilizer** manuf.)

RN 1313-27-5 HCA

CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



IC ICM C05F007-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

ST acid liquor nitrosulfate **fertilizer** manuf; etching  
 wastewater molybdenum **fertilizer** manuf

IT Wastewater  
 (etching, molybdenum-contg., in **fertilizer** manuf.)

IT **Fertilizers**  
 (molybdenum-nitrosulfate, manuf. of, from metal-etching  
 wastewaters)

IT **1313-27-5**, biological studies 7733-02-0, Zinc sulfate  
 (ZnSO<sub>4</sub>) 10043-35-3, Ortho boric acid, biological studies  
 (in **fertilizer** manuf.)

IT 7439-98-7, Molybdenum, biological studies 11098-84-3, Ammonium  
 molybdate  
 (in **fertilizer** manuf. from metal-etching wastewater)

L35 ANSWER 19 OF 41 HCA COPYRIGHT 2009 ACS on STN

102:112412 Original Reference No. 102:17647a,17650a Concentrated  
 glass-like potassium **phosphate fertilizer**.

Saringyulyan, R. S.; Zakoyan, R. O.; Pogosyan, M. A.; Astvatsatryan,  
 B. N. ("Armgiprozem" Armenian State Design Institute of Land  
 Management, USSR). U.S.S.R. SU 1119999 A1 **19841023** From:

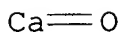
Otkrytiya, Izobret. 1984, (39), 77-8. (Russian). CODEN: URXXAF.  
APPLICATION: SU 1982-3554076 19821213.

AB The addn. of Al<sub>2</sub>O<sub>3</sub>, Co<sub>2</sub>O<sub>3</sub>, V<sub>2</sub>O<sub>5</sub>, and SO<sub>3</sub> to a K **phosphate fertilizer** material contg. K<sub>2</sub>O, P<sub>2</sub>O<sub>5</sub>, ZnO, **CaO**, **MgO**, CuO, B<sub>2</sub>O<sub>3</sub>, **Na<sub>2</sub>O**, MnO<sub>2</sub>, **MoO<sub>3</sub>**, and Fe<sub>2</sub>O<sub>3</sub> improved the range of the **fertilizer** soly. rate in the soil, decreased its hygroscopicity, and improved the agrochem. properties of the product. The glass-like **fertilizer** contained K<sub>2</sub>O 20-45, P<sub>2</sub>O<sub>5</sub> 45-70, ZnO 0.1-0.5, **CaO** 0.5-5, **MgO** 0.5-5, CuO 0.05-0.2, B<sub>2</sub>O<sub>3</sub> 0.2-3, **Na<sub>2</sub>O** 0.1-2, MnO<sub>2</sub> 0.1-0.5, **MoO<sub>3</sub>** 0.05-0.1, Fe<sub>2</sub>O<sub>3</sub> 0.1-5, Co<sub>2</sub>O<sub>3</sub> 0.01-0.1, V<sub>2</sub>O<sub>5</sub> 0.001-0.05, and SO<sub>3</sub> 0.1-0.5% (by wt.).

IT **1305-78-8**, biological studies **1309-48-4**, biological studies **1313-27-5**, biological studies **1313-59-3**, biological studies (potassium **phosphate fertilizer** contg.)

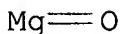
RN 1305-78-8 HCA

CN Calcium oxide (CaO) (CA INDEX NAME)



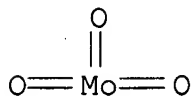
RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



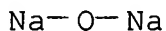
RN 1313-27-5 HCA

CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



RN 1313-59-3 HCA

CN Sodium oxide (Na<sub>2</sub>O) (CA INDEX NAME)



IC ICM C05B013-06

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 49

ST potassium **phosphate** glasslike **fertilizer** compn

IT Trace elements  
(oxides, potassium **phosphate fertilizer**)

- contg.)
- IT Oxides, biological studies  
(trace element, potassium **phosphate fertilizer**  
contg.)
- IT **Fertilizers**  
(potassium **phosphate**, glasslike concd., improvement of  
properties of, by trace element oxides)
- IT 1303-86-2, biological studies **1305-78-8**, biological  
studies 1308-04-9 1309-37-1, biological studies  
**1309-48-4**, biological studies 1313-13-9, biological  
studies **1313-27-5**, biological studies **1313-59-3**,  
biological studies 1314-13-2, biological studies 1314-62-1,  
biological studies 1317-38-0, biological studies 1344-28-1,  
biological studies 7446-11-9, biological studies  
(potassium **phosphate fertilizer** contg.)
- L35 ANSWER 20 OF 41 HCA COPYRIGHT 2009 ACS on STN  
101:53998 Original Reference No. 101:8391a,8394a Granulated complex  
**fertilizer** based on potassium **phosphate** glass.  
Kaplan, A. Yu.; Kurnyakov, I. F.; Posokhov, D. I.; Abramkin, A. D.;  
Sokol, A. S.; Kolyada, A. V.; Pasechnik, S. I. (USSR). U.S.S.R. SU  
1087498 A1 **19840423** From: Otkrytiya, Izobret., Prom.  
Obraztsy, Tovarnye Znaki 1984, (15), 83. (Russian). CODEN: URXXAF.  
APPLICATION: SU 1982-3411873 19820324.
- AB Action of K **phosphate** glass-based **fertilizer** is  
prolonged and complete soly. in H<sub>2</sub>O is maintained by adding  
**Na<sub>2</sub>O** 2.0-0.5, **Fe<sub>2</sub>O<sub>3</sub>** 0.3-1.0, **Mn<sub>2</sub>O<sub>3</sub>** 0.1-1.0, **B<sub>2</sub>O<sub>3</sub>** 0.05-0.20,  
and **MoO** 0.025-0.100 wt.%. The **fertilizer** supplies P<sub>2</sub>O<sub>5</sub>  
20.0-40.0, **CaO** 20.0-1.8, and trace elements consisting of  
**MgO** 0.5-1.0, **ZnO** 0.09-0.30, and **CuO** 0.03-0.10 wt.%, the  
balance being K<sub>2</sub>O.
- IT **1313-59-3**, biological studies **12058-07-0**  
(**fertilizer** action prolonged by)
- RN 1313-59-3 HCA
- CN Sodium oxide (Na<sub>2</sub>O) (CA INDEX NAME)

Na—O—Na

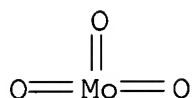
- RN 12058-07-0 HCA
- CN Molybdenum oxide (MoO) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Mo=O

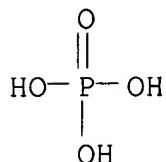
- IC C05B013-02
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 49

- ST complex **fertilizer** potassium **phosphate** glass
- IT Glass, oxide  
Glass, oxide  
(potassium **phosphate**, **fertilizer** based on)
- IT **Fertilizers**  
(complex, granulated, based on potassium **phosphate** glass)
- IT 1303-86-2, biological studies 1309-37-1, biological studies  
**1313-59-3**, biological studies 1317-34-6 **12058-07-0**  
(**fertilizer** action prolonged by)
- IT 7440-50-8, biological studies 7440-66-6, biological studies  
(**fertilizer** contg., based on potassium **phosphate** glass)
- L35 ANSWER 21 OF 41 HCA COPYRIGHT 2009 ACS on STN  
98:33409 Original Reference No. 98:5233a,5236a Mineral enrichment composition. Buddemeyer, Bruce D.; Neville, William A.; Rozzo, Nancy A.; Bourne, Richard G. (R.G.B. Laboratories, Inc., USA). U.S. US 4351735 A **19820928**, 24 pp. Cont.-in-part of U.S. 4,214,996. (English). CODEN: USXXAM. APPLICATION: US 1980-166460 19800707. PRIORITY: US 1978-970935 19781219.
- AB A dispersible product  $M_1A_1PO_4M_2XA_2$  (I), where  $M_1$  and  $M_2$  are polyvalent metals,  $A_1$  and  $A_2$  are H,  $NH_4$ , or alkali metal, and X is an org. acid with  $\geq 3$   $COO^-$  groups, which may be a repeating unit in polymeric or quasipolymeric compns., was prep'd. by mixing a cation source, such as Ca, an alkali metal, or  $NH_4$  phosphate source and an org. acid having  $\geq 3$   $COO^-$  groups; preferably citric acid, in  $H_2O$  and heating preferably at  $150-400^\circ F$  for 10-60 min. I is suitable for nutrient fortification of food or feed or for use as a **fertilizer**. Dispersibility may be enhanced by adjuncts such as  $OH^-$  sources, amino acids, whey, or caseinates. Thus, 1.9 g  $Mg(OH)_2$  was added to 3.7 g  $Ca(OH)_2$  in 773.2 g  $H_2O$  contg. 200 g corn syrup, followed by addn. of 11.2 g  $K_2PO_4$  and 10.0 g citric acid in the temp. range  $76-84^\circ$  for 5-10 min. The initial blend was mixed for 35 min with heating to a final temp. of  $180^\circ F$  and had a pH of 6.45. A semitransparent hazy white compn. was obtained. Further heating to  $250^\circ F$  for 15 min gave a yellow, more transparent, very slightly hazy compn., which after filtration through activated charcoal gave a compd. identical to the product obtained after heating at  $180^\circ F$ .
- IT **1313-27-5DP**, reaction products with alkali metal phosphates and polycarboxylic acids **7664-38-2DP**, alkali metal salts, reaction products with polycarboxylic acids and polyvalent cations (prepn. of, for feed and food and **fertilizer** mineral supplement)
- RN 1313-27-5 HCA
- CN Molybdenum oxide ( $MoO_3$ ) (CA INDEX NAME)





RN 7664-38-2 HCA  
CN Phosphoric acid (CA INDEX NAME)



(prepn. of, for feed and food and **fertilizer** mineral supplements)

IC A23L001-30  
INCL 252001000  
CC 17-6 (Food and Feed Chemistry)  
Section cross-reference(s): 19  
ST mineral enrichment compn phosphate polymer; trace element supplement  
food feed; **fertilizer** trace element supplement  
IT **Fertilizers**  
(mineral supplements for, polymeric)  
IT Whey  
(mixts. with mineral-contg. polymeric compds., for feed and food  
and **fertilizer** mineral supplements)  
IT Mineral elements  
Trace elements  
(polymeric supplements contg., for feed and food and  
**fertilizer**)  
IT Caseins, compounds  
(sodium complexes, mixts. with mineral-contg. polymeric compds.,  
for feed and food and **fertilizer** mineral supplements)  
IT Syrups  
(hydrolyzed starch, mixts. with mineral contg. polymeric compds.,  
for feed and food and **fertilizer** mineral supplements)  
IT 57-13-6, biological studies 1317-36-8, biological studies  
1327-53-3 1344-13-4 7439-89-6, biological studies 7439-93-2,  
biological studies 7440-09-7, biological studies 7440-23-5,  
biological studies 7440-36-0, biological studies 7440-41-7,  
biological studies 7761-88-8, biological studies 7803-55-6  
10042-76-9 10043-35-3, biological studies 10361-43-0  
12137-20-1 12653-71-3 12672-51-4 13410-01-0 13548-38-4  
13870-28-5 14798-03-9, biological studies 17194-00-2  
21041-95-2 21645-51-2, biological studies 37382-23-3  
(feed and food and **fertilizer** nutrient supplements)

contg.)

IT 50-69-1 50-99-7, biological studies 56-81-5, biological studies  
57-48-7, biological studies 57-50-1, biological studies 58-86-6,  
biological studies 59-23-4, biological studies 63-42-3 69-79-4  
147-81-9 512-69-6 9050-36-6

(mineral-contg. polymeric compds. blend with, for feed and food  
and **fertilizer** mineral supplements)

IT 77-92-9DP, reaction products with alkali metal phosphates and  
polyvalent cations 527-09-3DP, reaction products with alkali metal  
phosphates and polycarboxylic acids 563-71-3DP, reaction products  
with alkali metal phosphates and polycarboxylic acids 1305-62-0DP,  
reaction products with alkali metal phosphates and polycarboxylic  
acids 1309-42-8DP, reaction products with alkali metal phosphates  
and polycarboxylic acids 1310-65-2DP, reaction products with  
alkali metal phosphates and polycarboxylic acids **1313-27-5DP**  
, reaction products with alkali metal phosphates and polycarboxylic  
acids 1314-13-2DP, reaction products with alkali metal phosphates  
and polycarboxylic acids 1344-69-0DP, reaction products with  
alkali metal phosphates and polycarboxylic acids 3251-23-8DP,  
reaction products with alkali metal phosphates and polycarboxylic  
acids 3486-35-9DP, reaction products with alkali metal phosphates  
and polycarboxylic acids 4468-02-4DP, reaction products with  
alkali metal phosphates and polycarboxylic acids 7050-19-3DP,  
reaction products with alkali metal phosphates and polycarboxylic  
acids 7447-39-4DP, reaction products with alkali metal phosphates  
and polycarboxylic acids 7646-85-7DP, reaction products with  
alkali metal phosphates and polycarboxylic acids **7664-38-2DP**  
, alkali metal salts, reaction products with polycarboxylic acids  
and polyvalent cations 7705-08-0DP, reaction products with alkali  
metal phosphates and polycarboxylic acids 7733-02-0DP, reaction  
products with alkali metal phosphates and polycarboxylic acids  
7785-87-7DP, reaction products with alkali metal phosphates and  
polycarboxylic acids 10028-22-5DP, reaction products with alkali  
metal phosphates and polycarboxylic acids 10043-35-3DP, reaction  
products with alkali metal phosphates and polycarboxylic acids  
10377-66-9DP, reaction products with alkali metal phosphates and  
polycarboxylic acids 11113-74-9DP, reaction products with alkali  
metal phosphates and polycarboxylic acids 20344-49-4DP, reaction  
products with alkali metal phosphates and polycarboxylic acids  
21908-53-2DP, reaction products with alkali metal phosphates and  
polycarboxylic acids

(prepn. of, for feed and food and **fertilizer** mineral  
supplement)

IT 50-21-5DP, reaction products with alkali metal phosphates and  
polyvalent cations 60-00-4DP, reaction products with alkali metal  
phosphates and polyvalent cations 110-17-8DP, reaction products  
with alkali metal phosphates and polyvalent cations 124-04-9DP,  
reaction products with alkali metal phosphates and polyvalent

cations 139-13-9DP, reaction products with alkali metal phosphates and polyvalent cations 140-01-2DP, reaction products with alkali metal phosphates and polyvalent cations 144-62-7DP, reaction products with alkali metal phosphates and polyvalent cations 526-95-4DP, reaction products with alkali metal phosphates and polyvalent cations 1310-58-3DP, reaction products with alkali metal phosphates and polycarboxylic acids 6915-15-7DP, reaction products with alkali metal phosphates and polyvalent cations 7447-40-7DP, reaction products with alkali metal phosphates and polycarboxylic acids 7647-01-0DP, reaction products with alkali metal phosphates and polyvalent cations **7664-38-2DP**, reaction products with alkali metal phosphates and polyvalent cations 7778-53-2DP, alkali metal salts, reaction products with polycarboxylic acids and polyvalent cations 7778-77-0DP, alkali metal salts, reaction products with polycarboxylic acids and polyvalent cations 7782-91-4DP, reaction products with alkali metal phosphates and polyvalent cations 10294-56-1DP, alkali metal salts, reaction products with polycarboxylic acids and polyvalent cations 10343-62-1DP, alkali metal salts, reaction products with polycarboxylic acids and polyvalent cations  
(prepn. of, for feed and food and **fertilizer** mineral supplements)

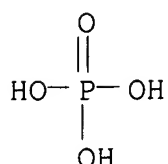
L35 ANSWER 22 OF 41 HCA COPYRIGHT 2009 ACS on STN

96:103101 Original Reference No. 96:16925a,16928a Material composition and method for synthesizing products containing metal having a high degree of dispersibility in aqueous medium for nonnutritive and nonpharmacological uses. Buddemeyer, Bruce Donald; Rozzo, Nancy Ann; Neville, William Amos; Bourne, Richard Gordon (R.G.B. Laboratories, Inc., USA). Braz. Pedido PI BR 8001201 A **19810901**, 26 pp. (Portuguese). CODEN: BPXXDX. APPLICATION: BR 1980-1201 19800229.

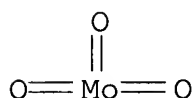
AB Mineral-contg. polymeric compns. for nonpharmacol. and nonnutritional uses have the generalized formula in which M1 and M2 can be Ca, Mg, Fe, Ni, Cu, B, Zn, Mn, or Mo; A1 and A2 are groups contg. H and 2 alk. metals and X is an org. acid fraction contg.  $\leq 3$  carboxyl group (preferably citrate). The synthesis process includes mixing a source of cation, a source of  $K_2HPO_4$ , and an org. acid with water, followed by heating and agitation. The dispersibility of the compn. is increased by using auxiliary compds. contg. OH groups, such as sugars. The compns. obtained can be used for **fertilization** of soil, esp. for application during irrigation, or for other purposes for which dispersibility is desirable. Thus, a mineral enrichment prepn. for soils was prepd. by mixing corn syrup (200.0 g) with  $Ca(OH)_2$  (3.7 g),  $Mg(OH)_2$  (1.9 g),  $K_2HPO_4$  (11.2 g), and citric acid (10 g) with 773.2 g of water at 24-28°. The initial pH was 6.75, and after the mixt. was agitated and heated to 180° for 35 min, the pH was 6.45. The

prepn. obtained was heated again at 121° and then refrigerated overnight (at 7°) and filtered through activated C.

IT **7664-38-2D**, reaction products with mineral elements and polycarboxylic acids  
(**fertilizers** contg., metal-contg. polymeric)  
RN 7664-38-2 HCA  
CN Phosphoric acid (CA INDEX NAME)



IT **1313-27-5D**, reaction products with phosphoric and polycarboxylic acids  
(**fertilizers** contg., polymeric)  
RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)

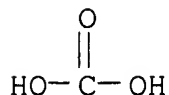


IC C08G079-14  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 35  
ST metal polymer citrate **fertilizer**  
IT **Fertilizers**  
(metal-contg. polymeric, manuf. of)  
IT Carboxylic acids, compounds  
(reaction products with mineral elements and **phosphoric acids**, polymeric compns. contg., as **fertilizers**)  
IT Syrups  
(hydrolyzed starch, **fertilizers** contg., metal-contg. polymeric)  
IT Polymers, biological studies  
(metal-contg., as **fertilizers**)  
IT 50-99-7D, mixts. with polymeric mineral compns. 56-81-5D, mixts. with polymeric mineral compns. 57-50-1D, mixts. with polymeric mineral compns. 60-00-4D, mixts. with polymeric mineral compns. 79-14-1D, mixts. with polymeric mineral compns. 526-95-4D, mixts. with polymeric mineral compns.  
(as **fertilizers**)

- IT 87-73-0D, complexes with iron, reaction product with **phosphoric acid** and polycarboxylic acids  
463-79-6D, complexes with iron, reaction product with **phosphoric acid** and polycarboxylic acids  
(**fertilizers** contg.)
- IT 7558-79-4D, reaction products with mineral elements and polycarboxylic acids **7664-38-2D**, reaction products with mineral elements and polycarboxylic acids 7758-11-4D, reaction products with mineral elements and polycarboxylic acids  
7778-53-2D, reaction products with mineral elements and polycarboxylic acids 7778-77-0D, reaction products with mineral elements and polycarboxylic acids 10343-62-1D, reaction products with mineral elements and polycarboxylic acids  
(**fertilizers** contg., metal-contg. polymeric)
- IT 527-09-3D, reaction products with phosphoric and polycarboxylic acids 1305-62-0D, reaction products with phosphoric and polycarboxylic acids 1309-42-8D, reaction products with phosphoric and polycarboxylic acids 1310-58-3D, reaction products with phosphoric and polycarboxylic acids 1310-65-2D, reaction products with phosphoric and polycarboxylic acids **1313-27-5D**, reaction products with phosphoric and polycarboxylic acids  
1314-13-2D, reaction products with phosphoric and polycarboxylic acids 1344-69-0D, reaction products with phosphoric and polycarboxylic acids 3251-23-8D, reaction products with phosphoric and polycarboxylic acids 3486-35-9D, reaction products with phosphoric and polycarboxylic acids 4468-02-4D, reaction products with phosphoric and polycarboxylic acids 7439-89-6D, complexes with carbonate and saccharate, reaction products with phosphoric and polycarboxylic acids 7447-39-4D, reaction products with phosphoric and polycarboxylic acids 7447-40-7D, reaction products with phosphoric and polycarboxylic acids 7646-85-7D, reaction products with phosphoric and polycarboxylic acids 7705-08-0D, reaction products with phosphoric and polycarboxylic acids  
7733-02-0D, reaction products with phosphoric and polycarboxylic acids 7782-91-4D, reaction products with phosphoric and polycarboxylic acids 7785-87-7D, reaction products with phosphoric and polycarboxylic acids 10028-22-5D, reaction products with phosphoric and polycarboxylic acids 10043-35-3D, reaction products with phosphoric and polycarboxylic acids 10377-66-9D, reaction products with phosphoric and polycarboxylic acids 12054-48-7D, reaction products with phosphoric and polycarboxylic acids  
18624-44-7D, reaction products with phosphoric and polycarboxylic acids 21908-53-2D, reaction products with phosphoric and polycarboxylic acids  
(**fertilizers** contg., polymeric)
- IT 77-92-9D, reaction products with mineral elements and **phosphoric acids** 139-13-9D, reaction products with mineral elements and **phosphoric acids**

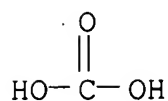
7050-19-3D, reaction products with **phosphoric acid**  
(polymeric mineral compns. contg., as **fertilizers**)

- L35 ANSWER 23 OF 41 HCA COPYRIGHT 2009 ACS on STN  
96:84637 Original Reference No. 96:13889a,13892a Controlled release of trace nutrients. Cardarelli, Nathan F. (Environmental Chemicals, Inc., USA). U.S. US 4299613 A **19811110**, 14 pp. Cont.-in-part of U.S. Ser. No. 14,118. (English). CODEN: USXXAM. APPLICATION: US 1979-51102 19790622. PRIORITY: US 1978-916570 19780619; US 1979-5174 19790122; US 1979-14118 19790222.
- AB Slow release of trace nutrients to soil is obtained by applying a mixt. comprising .apprx.10-.apprx.160 parts by wt. of nutrient and .apprx.0.1-.apprx.70 parts by wt. of porosigen in a polymer matrix (100 parts by wt.). The polymer matrix is made of an ethylene-vinyl acetate copolymer (I) [24937-78-8], and ethylene-propylene copolymer [9010-79-1], a low-d. polyethylene (II) [9002-88-4], and combinations thereof. Thus, formulations contg. I (melt index 9.0) 50, II (melt index 8.5) 40, Zn stearate (as dispersant) 2, and ZnSO4.H2O 80 parts with or without NaHCO3 (as porosigen) 5 parts were immersed in mineral-free distd. water. Steady-state emission rates were 0.04 and 0.37% agent loss/day without and with NaHCO3, resp.
- IT **497-19-8**, biological studies  
(as porosigen in slow-release trace element **fertilizers**)
- RN 497-19-8 HCA  
CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



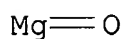
●2 Na

- IT **546-93-0 1309-48-4**, biological studies  
**1313-27-5**, biological studies  
(**fertilizers** contg., controlled-release)
- RN 546-93-0 HCA  
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)

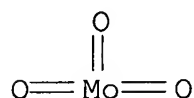


● Mg

RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



IC A01N025-00  
INCL 71-64F  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST trace element controlled release soil; polymer matrix porosigen  
micronutrient **fertilizer**  
IT Porosity  
(agents for enhancement of, controlled-release  
**fertilizers** contg.)  
IT Alkali metal halides, uses and miscellaneous  
Alkaline earth halides  
(as porosigens in slow-release trace element **fertilizers**  
)  
IT Trace elements  
(**fertilizers** with controlled release of)  
IT **Fertilizers**  
(trace element, controlled-release, polymer matrix and porosigens  
in)  
IT 107-21-1, biological studies 144-55-8, biological studies  
**497-19-8**, biological studies 1066-33-7 1344-09-8  
7440-02-0D, halogenated 7440-22-4D, halogenated 7440-31-5D,  
halogenated 7631-86-9, biological studies 7783-20-2, biological  
studies 10192-29-7 10361-29-2 12124-97-9 12125-01-8  
12125-02-9, biological studies 60676-62-2  
(as porosigen in slow-release trace element **fertilizers**)

)

IT 142-72-3 **546-93-0** 1309-37-1, biological studies  
**1309-48-4**, biological studies 1313-13-9, biological  
studies **1313-27-5**, biological studies 1314-13-2,  
biological studies 1317-39-1, biological studies 1332-40-7  
3486-35-9 7446-08-4 7487-88-9, biological studies 7488-56-4  
7492-68-4 7631-95-0 7646-85-7, biological studies 7705-08-0,  
biological studies 7720-78-7 7733-02-0 7757-88-2 7758-98-7,  
biological studies 7773-01-5 7779-88-6 7779-90-0 7785-87-7  
7791-23-3 10043-35-3 10043-83-1 10103-48-7 10124-43-3  
10141-05-6 10361-95-2 10377-60-3 10377-66-9 10402-29-6  
13410-01-0 13446-49-6 13768-86-0 80546-49-2 80746-60-7  
(**fertilizers** contg., controlled-release)

IT 7439-89-6, biological studies 7439-95-4, biological studies  
7439-96-5, biological studies 7439-98-7, biological studies  
7440-42-8, biological studies 7440-48-4, biological studies  
7440-50-8, biological studies 7440-66-6, biological studies  
7782-49-2, biological studies  
(**fertilizers**, controlled-release)

L35 ANSWER 24 OF 41 HCA COPYRIGHT 2009 ACS on STN  
94:155667 Original Reference No. 94:25455a,25458a Controlled release of  
trace nutrients. Cardarelli, Nathan F. (Environmental Chemicals,  
Inc., USA). PCT Int. Appl. WO 8100010 **19810108**, 88 pp.  
(English). CODEN: PIXXD2. APPLICATION: WO 1980-US668 19800602.

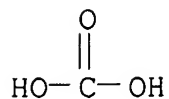
AB Controlled-release trace element compns. comprise  
.apprx.10-.apprx.160 parts by wt. of plant nutrient per 100 parts of  
a polymer matrix made of ethylene-vinyl acetate copolymer (I)  
[24937-78-8] (.apprx.60-.apprx.95% by wt. ethylene, mol. wt.  
.apprx.40,000-.apprx.400,000), ethylene-propylene copolymer  
[9010-79-1] (.apprx.30-.apprx.75% by wt. ethylene, mol. wt.  
.apprx.50,000-.apprx.250,000), and(or) polyethylene (II)  
[9002-88-4] with a d. of .apprx.0.90-0.94 g/cm<sup>3</sup>, mol. wt.  
.apprx.100,000-.apprx.400,000; porosity-enhancing agents with a  
soly. of <100 g/100 g water are included in some formulations at  
.apprx.0.1-.apprx.70 parts by wt./100 parts polymer matrix. Thus, I  
50, II 40, Zn stearate 2, ZnSO<sub>4</sub>.H<sub>2</sub>O 80, and porosity enhancer NH<sub>4</sub>  
sulfate 10 parts were mixed to give a formulation with an emission  
rate of 0.38% agent/day, whereas the same formulation with NH<sub>4</sub>  
sulfate omitted had an emission rate of 0.04%/day. Soybean grown on  
soil amended with 1 g/pot (1300 g soil) of NH<sub>4</sub> sulfate-contg.  
formulation had an av. postgermination stem growth of 2.75 cm/day  
vs. stem growth of 1.09 cm/day in the unfertilized control.

IT **471-34-1**, biological studies **497-19-8**, biological  
studies  
(as porosity enhancer for controlled-release **fertilizers**  
)

RN 471-34-1 HCA



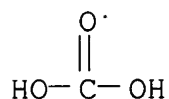
CN Carbonic acid calcium salt (1:1) (CA INDEX NAME)



● Ca

RN 497-19-8 HCA

CN Carbonic acid sodium salt (1:2) (CA INDEX NAME)



●2 Na

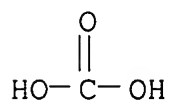
IT 546-93-0 1309-48-4, biological studies

1313-27-5, biological studies

(fertilizer contg., controlled-release)

RN 546-93-0 HCA

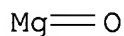
CN Carbonic acid, magnesium salt (1:1) (CA INDEX NAME)



● Mg

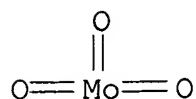
RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA

CN Molybdenum oxide (MoO3) (CA INDEX NAME)

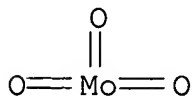


- IC C05G003-00; B29C025-00; C08J009-26
- CC 19-5 (Fertilizers, Soils, and Plant Nutrition)
- ST trace element controlled release **fertilizer**; polymer matrix trace element **fertilizer**; porosity enhancer polymer micronutrient **fertilizer**
- IT Alkali metal halides, uses and miscellaneous  
 Alkaline earth halides  
 Carbonates, uses and miscellaneous  
 Nitrates, uses and miscellaneous  
 Nitrides  
 Nitrites  
 Oxides, uses and miscellaneous  
   **Phosphates**, uses and miscellaneous  
 Phosphides  
 Phosphites  
 Sulfates, uses and miscellaneous  
 Sulfides, uses and miscellaneous  
 Sulfites  
   (as porosity enhancers for controlled-release **fertilizers**)  
   )
- IT Trace elements  
   (**fertilizers**, controlled-release)
- IT Carbonates, uses and miscellaneous  
   (hydrogen, as porosity enhancers for controlled-release **fertilizers**)
- IT **Fertilizers**  
   (trace element, controlled-release, polymer matrix and porosity enhancers in)
- IT 107-21-1, biological studies 144-55-8, biological studies  
   **471-34-1**, biological studies **497-19-8**, biological studies 1066-33-7 1344-09-8 7631-86-9, biological studies 7783-20-2, biological studies 10192-29-7 10361-29-2 12124-97-9 12125-01-8 12125-02-9, biological studies 60676-62-2  
   (as porosity enhancer for controlled-release **fertilizers**)  
   )
- IT 7440-02-0D, salts 7440-22-4D, salts 7440-31-5D, salts  
   (as porosity enhancers for controlled-release **fertilizers**)  
   )
- IT 142-72-3 **546-93-0** 1309-37-1, biological studies **1309-48-4**, biological studies 1313-13-9, biological studies **1313-27-5**, biological studies 1314-13-2, biological studies 1317-39-1, biological studies 1330-43-4

1332-40-7 3486-35-9 7446-08-4 7487-88-9, biological studies  
 7488-56-4 7492-68-4 7631-95-0 7646-79-9, biological studies  
 7646-85-7, biological studies 7705-08-0, biological studies  
 7720-78-7 7733-02-0 7757-88-2 7758-98-7, biological studies  
 7773-01-5 7779-88-6 7779-90-0 7785-87-7 7791-23-3  
 10043-35-3, biological studies 10043-83-1 10103-48-7  
 10124-43-3 10141-05-6 10361-95-2 10377-60-3 10377-66-9  
 13410-01-0 13446-49-6 13768-86-0  
 (**fertilizer** contg., controlled-release)  
 IT 9002-88-4 9010-79-1 24937-78-8  
 (**fertilizer** with matrix of, trace element  
 controlled-release)  
 IT 7439-89-6, biological studies 7439-96-5, biological studies  
 7439-98-7, biological studies 7440-42-8, biological studies  
 7440-48-4, biological studies 7440-50-8, biological studies  
 7440-66-6, biological studies 7782-49-2, biological studies  
 (**fertilizers**, controlled-release)  
 L35 ANSWER 25 OF 41 HCA COPYRIGHT 2009 ACS on STN  
 90:191205 Original Reference No. 90:30335a,30338a Glass-formation  
 region of some three-component **phosphate**, boron-  
**phosphate**, and molybdenum-borate systems. Gabrovski, Kh.;  
 Obretenov, Ts. (Higher Inst. Chem. Technol., Burgas, Bulg.).  
 Godishnik na Visshiya Khimiko-Tekhnologichen Institut, Burgas,  
 Volume Date 1977, 12, Pt. 1, 199-205 (Bulgarian) **1978**.  
 CODEN: GVKTAG. ISSN: 0367-5459.  
 AB The glass-formation regions in mixts. contg. P2O5, **MgO**,  
 CoO, ZnO, CuO, B2O3, **MoO3**, Mn2O3, Fe2O3, and/or CuO, were  
 presented. Glass was formed by casting the 800-1350° melts  
 onto cast iron plates. The glasses could be used as metal-rich  
 additives for **fertilizers**.  
 IT **1309-48-4**, uses and miscellaneous **1313-27-5**, uses  
 and miscellaneous  
 (glass, as **fertilizer** additive)  
 RN 1309-48-4 HCA  
 CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

RN 1313-27-5 HCA  
 CN Molybdenum oxide (MoO3) (CA INDEX NAME)



- CC 57-1 (Ceramics)  
Section cross-reference(s): 19
- ST **phosphate glass fertilizer**
- IT **Fertilizers**  
(**phosphate** glass additives for)
- IT Glass, oxide  
(**phosphate**, as **fertilizer** additive)
- IT 1307-96-6, uses and miscellaneous 1309-37-1, uses and  
miscellaneous **1309-48-4**, uses and miscellaneous  
**1313-27-5**, uses and miscellaneous 1314-13-2, uses and  
miscellaneous 1314-56-3, uses and miscellaneous 1317-34-6  
1317-38-0, uses and miscellaneous  
(glass, as **fertilizer** additive)
- L35 ANSWER 26 OF 41 HCA COPYRIGHT 2009 ACS on STN  
86:188430 Original Reference No. 86:29557a,29560a  
**Superphosphate**. Bergmann, Werner; Joachim, Rolf; Kothe,  
Klaus Uwe; Maiwald, Helmut; Meyer, Gisela; Stahmann, Dieter (Ger.  
Dem. Rep.). Ger. (East) DD 122064 **19760912**, 7 pp.  
(German). CODEN: GEXXA8. APPLICATION: DD 1975-188854 19751015.
- AB Use is made of oxigenic, hydrocarbon-free, exhausted, and finely  
pulverized Mo-contg. hydrogenation catalyst in an amt. of  
≤10%, preferably 0.1-0.5%, as an additive for normally  
produced **superphosphate**. Thus, hydrogenation catalyst not  
capable of regeneration and obtained from the TTH or HTM processes  
was roasted in a kiln at a temp. of 550°. In addn. to the  
regulation of the temp., different amts. of atm. N and steam were  
employed. After .apprx.5 days roasting time the catalyst was  
converted to its oxigenic form and freed from contamination by  
hydrocarbons. After roasting, the catalyst had the following  
compn.: **MoO3** 14.4, **NiO** 4.5, **CaO** 1.0, **Fe2O3** 1.3,  
**MgO** 0.4, **P2O5** 0.6, **As2O3** 1.1, and **Al2O3** 76.7%. The roasted  
product was then ground to a fine powder in a hammer mill. To 98 kg  
of the usual **superphosphate** material was added 2 kg of the  
prepd. hydrogenation catalyst with a **MoO3** content of 14.4%  
and the 2 components mixed in a mixer. The resulting product  
contained 0.19% Mo.
- IC C05B001-02
- CC 19-5 (Fertilizers, Soils, and Plant Nutrition)
- ST **superphosphate fertilizer molybdenum**;  
hydrogenation catalyst **fertilizer**
- IT **Fertilizers**  
(**superphosphate**, molybdenum-contg., from hydrogenation  
catalysts)
- IT 7439-98-7P, biological studies  
(**fertilizer** contg. **superphosphate** and, manuf.  
from hydrogenation catalysts)

L35 ANSWER 27 OF 41 HCA COPYRIGHT 2009 ACS on STN

86:188426 Original Reference No. 86:29553a,29556a Magnesium-calcium-**phosphate fertilizer**. Bergmann, Werner; Diekers, Guenter; Joachim, Rolf; Maiwald, Helmut; Meyer, Gisela; Miltzlaff, Heinz; Pfeil, Gisela; Riesel, Werner; Voigtberger, Klaus (Ger. Dem. Rep.). Ger. (East) DD 121506 **19760805**, 3 pp. (German). CODEN: GEXXA8. APPLICATION: DD 1975-188853 19751015.

AB The discovery concerns a Mo-contg. Mg-Ca-**phosphate fertilizer** obtained in a melt decompn. process. A hydrogenation catalyst from the TTH process that was no longer reclaimable was roasted in an oven at 550°. Temp. regulation along with atm. N and steam were employed to vary its compn. After .apprx.7 days roasting, the catalyst was converted to its oxigenic form and freed from hydrocarbon contamination. After roasting, the catalyst had the following compn.: **MoO3** 13.0, NiO 4.5, **CaO** 1.0, Fe2O3 1.3, **MgO** 0.4, P2O5 0.6, As2O3 1.1, and Al2O3 78.1 wt.%. The roasted contact pellets were then pulverized in a hammer mill. For the carrying out of the melt decompn. process, the following mixt. was prepd.: Kola apatite conc. 100, kieserite 100, sand 10, and catalyst 4.5 parts by wt. The mixt. was then melted down in a crucible at in an oven at 1100°. After attaining a clear melt it was fractured by pouring into water. The resulting porous granules were, after drying, pulverized. In this way a **fertilizer** was obtained with the compn.: P2O5 21.5, citric acid-sol. P2O5 20.2, **MgO** 11.3, and Mo 0.2 wt.%. The As that was introduced with the catalyst in the melt decompn. process was 91.1% split off.

IC C05B009-00

CC 19-5 (Fertilizers, Soils, and Plant Nutrition)

ST magnesium calcium **phosphate fertilizer**;  
molybdenum **fertilizer** catalyst

IT **Fertilizers**

(magnesium **phosphate**, calcium, molybdenum-contg., from hydrogenation catalyst and minerals, by melt decompn. process)

L35 ANSWER 28 OF 41 HCA COPYRIGHT 2009 ACS on STN

57:51347 Original Reference No. 57:10270c-d Effects of various ingredients upon fused calcium magnesium **phosphate fertilizer**. Ando, Jumpei (Chuo Univ., Tokyo). Kogyo Kagaku Zasshi, 62, 677-81 (Unavailable) **1959**. CODEN: KGKZA7. ISSN: 0368-5462.

AB Effects of a small amt. of **Na2O** and rare elements of **fertilizer** such as MnO, B2O3, ZnO, and **MoO3** upon fusion point, flow of the melt, citric acid soly., and constitution of fused Ca Mg **phosphate fertilizer** were studied. By addn. of a small amt. of B2O3, the fusion point of the **phosphate** was lowered and sol. **phosphate** was obtained by fusion at lower temp. **Na2O** promoted the

crystn. of the **phosphate** and thus was apt to depress the soly., esp. when fusion or quenching of the **phosphate** was not practiced sufficiently. By addn. of MnO to the **phosphate** in place of **MgO**, the fluidity of the melt was depressed. However, about 3% MnO could be contained in the **phosphate** which contained about 20% P<sub>2</sub>O<sub>5</sub> and 1.6% F without decreasing citric acid soly. of the **phosphate**. ZnO was evapd. **MoO<sub>3</sub>** depressed the citric acid soly. of the **phosphate**.

CC 61 (Plant Nutrition, Soils, and Fertilizers)

IT Elements

(calcium Mg **phosphate fertilizers** and)

IT **Fertilizers**

(calcium Mg **phosphate**, additive effect on)

IT 7439-98-7, Molybdenum 7440-66-6, Zinc

(calcium Mg **phosphate fertilizers** in relation to)

IT 7440-42-8, Boron

(**fertilizer** (CaMg **phosphate**) in relation to)

IT 25618-23-9, Calcium magnesium **phosphate** 25618-23-9, Magnesium calcium **phosphate**

(**fertilizers** contg., additive effect on)

IT 7439-96-5, Manganese

(in **fertilizers** (Ca Mg **phosphate**), effect on constitution and properties)

L35 ANSWER 29 OF 41 HCA COPYRIGHT 2009 ACS on STN

54:132900 Original Reference No. 54:25465e-f Lime-

**superphosphate fertilizer** topdressing of soils

derived from basalt and andesite and its effect on element levels of a grass. Wells, N. Colloq. Congr. Intern. Sci. Sol., 6th, Paris 224-30 From: Soils and Fertilizers 21, Abstr. No. 2051 (1958). (Unavailable) 1956.

AB cf. CA 52, 4903e. By the leached-clay stage of weathering, Mo in the topsoil is not directly available to a grass on these soils. Lime-super topdressings release Mo to the grass, but where crystn. of Fe oxide is extensive the Mo release is slight. Lime-super reduced the capacity of the soil to retain the **MoO<sub>4</sub>** ion and substantially reduced the levels of Fe, Al, and Ti in the grass.

CC 15 (Soils and Fertilizers)

IT Hay

(**fertilizer** expts. with)

IT Lime

(**fertilizers** from **superphosphate** and, trace elements in grass in relation to)

IT **Fertilizers**

(lime and **superphosphate**, effect on trace elements in grass on andesite- and basalt-derived soil)

- IT Grasses  
(trace elements in, on andesite- and basalt-derived soil, effect of **CaO** and **superphosphates** on)
- IT Elements  
(trace or minor, in grass on andesite- and basalt-derived soil, effect of **CaO** and **superphosphates** on)
- IT 7440-32-6, Titanium  
(in grass on andesite- and basalt-derived soil, effect of **CaO** and **superphosphates** on)
- IT 7429-90-5, Aluminum 7439-89-6, Iron 7439-98-7, Molybdenum  
(in grasses, on andesite- and basalt-derived soil, effect of **CaO** and **superphosphates** on)
- L35 ANSWER 30 OF 41 HCA COPYRIGHT 2009 ACS on STN  
53:126131 Original Reference No. 53:22669a-b Mushroom growing on synthetic manure composts. VI. Mushroom growing by new synthetic composts with trace elements. Takahashi, Zenjiro; Oka, Nobuko Toyo Kanzume Senshu Gakko Kenkyu Hokokusho, 4, 69-75 (Unavailable) **1954**. CODEN: KHTKAE. ISSN: 0368-5659.
- AB FTE **fertilizer** (MnO<sub>2</sub> 4.0, Fe<sub>2</sub>O<sub>3</sub> 10.0, ZnO 4.0, CuO 4.0, B<sub>2</sub>O<sub>3</sub> 2.0, and **MoO<sub>3</sub>** 0.2%), used with **CaCO<sub>3</sub>**, was effective for the growth of mycelium. This effect was also ascertained with synthetic composts consisting of rice straw and N **fertilizers**. The mushrooms grown on this FTE-added medium were not harmed at all by such diseases as Bubbles, Brown spot, Brown blotch, Rose comb, and Open veils throughout their growth.
- CC 15 (Soils and Fertilizers)
- IT **Fertilizers**  
(compost, trace-element contg., mushroom growth on)
- L35 ANSWER 31 OF 41 HCA COPYRIGHT 2009 ACS on STN  
52:27125 Original Reference No. 52:4913i,4914a Szilard-Chalmers effect in phosphate **fertilizers** irradiated with neutrons. Scheffer, F.; Ludwig, F. (Univ. Gottingen, Germany). Naturwissenschaften, 44, 396 (Unavailable) **1957**. CODEN: NATWAY. ISSN: 0028-1042.
- AB cf. Thilo, C.A. 49, 6758e. The radiochem. introduction of impurities into phosphates by the Szilard-Chalmers effect and the conversion of phosphates and other P substances was investigated. After radiation, samples were dissolved in citric acid and the phosphate of **H<sub>3</sub>PO<sub>4</sub>** was pptd. with (NH<sub>4</sub>)<sub>2</sub> **MoO<sub>4</sub>**. The impurities, tagged with P<sup>32</sup>, consisted of about equal amts. of reduced P acids (HPO<sub>2</sub> and H<sub>3</sub>PO<sub>2</sub>) and condensed HPO<sub>3</sub>.
- CC 15 (Soils and Fertilizers)
- IT Szilard-Chalmers reaction  
(in phosphate **fertilizers** irradiated with neutrons)
- IT **Fertilizers**  
(phosphorus, neutron-irradiated, Szilard-Chalmers reaction in)

IT 12586-31-1, Neutron  
(phosphate **fertilizers** bombarded by, Szilard-Chalmers  
reaction in)

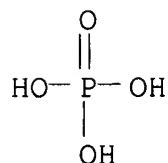
L35 ANSWER 32 OF 41 HCA COPYRIGHT 2009 ACS on STN  
37:15326 Original Reference No. 37:2503h-i The determination of P2O5  
inorgano-mineral **fertilizers**. Sadovskii, P. I.  
Khimizatsiya Sotsialisticheskogo Zemledeliya, 9(No. 8), 49 From:  
Chem. Zentr. 1941, I, 1593. (Unavailable) **1940**. CODEN:  
KSZEAZ. ISSN: 0368-6906.

AB cf. C. A. 36, 3120.5, 3312.1. High P2O5 values are obtained by  
ashing the org. substance with the addn. of H2O2 or Se. The addn.  
of **Mo oxide** and MgCl2 is recommended to prevent  
the volatilization of the **phosphoric acid** at the  
instant of its formation.

IT **7664-38-2, Phosphoric acid**  
(detn. of, in **fertilizers**)

RN 7664-38-2 HCA

CN Phosphoric acid (CA INDEX NAME)



CC 15 (Soils, Fertilizers, and Agricultural Poisons)

IT **Fertilizers**  
(**phosphoric acid** in, detn. of)

IT **7664-38-2, Phosphoric acid**  
(detn. of, in **fertilizers**)

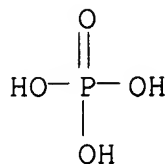
L35 ANSWER 33 OF 41 HCA COPYRIGHT 2009 ACS on STN  
33:33378 Original Reference No. 33:4730h-i Rapid determination of  
available **phosphoric acid** in mixed  
**fertilizers**. Timofeyuk, K. M. Zavodskaya Laboratoriya, 7,  
1311-12 (Unavailable) **1938**. CODEN: ZVDLAU. ISSN:  
0321-4265.

AB In the detn. of available P2O5 in **fertilizers** by the  
Niessen method, quick results can be obtained by extg. P2O5 with  
Wagner's reagent, acidifying the soln. with a few drops of HNO3 to  
prevent the copptn. of **MoO3** with the phosphomolybdate ppt.  
and filtering through a Gooch crucible. Full details are given for  
the analysis of various types of **fertilizers** in 1 hr. with  
an accuracy to 0.3% of available P2O5.

IT **7664-38-2, Phosphoric acid**  
(detn. of available, in **fertilizers**)



RN 7664-38-2 HCA  
 CN Phosphoric acid (CA INDEX NAME)



CC 15 (Soils, Fertilizers, and Agricultural Poisons)

IT **Fertilizers**

(**phosphoric acid** in, detn. of)

IT **7664-38-2, Phosphoric acid**

(detn. of available, in **fertilizers**)

L35 ANSWER 34 OF 41 HCA COPYRIGHT 2009 ACS on STN

30:6086 Original Reference No. 30:801i,802a-e Study of some methods for the determination of **phosphoric acid** by

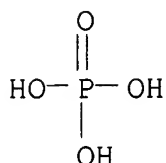
precipitation as ammonium phosphomolybdate. Application to the analysis of **fertilizers**. Terlet, H.; Briau, A. Annales des Falsifications et des Fraudes, 28, 546-55 (Unavailable)

**1935**. CODEN: AFEFA4. ISSN: 0365-2157.

AB cf. C. A. 29, 2284.1. Scheffer's method, which is based on that of von Lorenz, consists in pptg. P2O5 as NH4 phosphomolybdate by addn. to the hot soln. of a large excess of NH4 molybdate soln. all at one time, washing the ppt. with Na2SO4 soln., dissolving the ppt. in excess of 0.5 N NaOH in presence of CH2O and titrating the excess of alkali with phenolphthalein as indicator. T. and B. confirmed that, in order to obtain complete pptn. in presence of citric acid, a large excess of precipitant is required, but if it is added all at once there is danger of entraining molybdic acid, thereby giving high results by either gravimetric or volumetric detn. of the ppt. According to Scheffer the ppt. has the following compn.: PO(**MoO3**)12(OH4)3.2HNO3; and soln. takes place according to  $4\text{PO}(\text{MoO}_3)_{12}(\text{OH}_4)_3.2\text{HNO}_3 + 112\text{NaOH} + 18\text{CH}_2\text{O} = 48\text{Na}_2\text{MoO}_4 + 8\text{NaNO}_3 + 4\text{Na}_2\text{HPO}_4 + 3(\text{CH}_2)_6\text{N}_4 + 82\text{H}_2\text{O}$ , so that  $1\text{P}_2\text{O}_5 = 56\text{NaOH}$ . This latter ratio was confirmed, and the end point in presence of CH2O is quite sharp, but no nitric N could be detected in the ppt., which is taken as an indication of entrainment of molybdic acid by the ppt. This entrainment can be prevented by adding the precipitant, drop by drop, and using only a slight excess when no citric acid is present. When the phosphomolybdate ppt. is washed with a neutral KNO3 soln., as suggested by Blair (Analysis of Iron and Steel), a variable amt. of the NH4 (up to 50%) is displaced by K; the same thing occurs, but to less extent and much more slowly, when the ppt. is washed with Na2SO4 as recommended by Scheffer; this reaction does not affect the results of titration in absence of CH2O, but gives low results in

its presence and gives high results if the phosphomolybdate ppt. is detd. gravimetrically. Accurate results can be obtained in both cases by washing first with  $\text{NH}_4\text{NO}_3$  in  $\text{HNO}_3$  and then with  $\text{H}_2\text{O}$ . Detailed directions are given for attacking natural Ca phosphates, **fertilizers** contg. org. matter (bone phosphates, guanos, etc.), superphosphates, activated phosphates and mixed **fertilizers**, basic slags, and alkali phosphates, and for pptg.  $\text{P}_2\text{O}_5$  in the soln. of the **fertilizer** both in the absence and in presence of citrate.

IT **7664-38-2, Phosphoric acid**  
 (detn. of)  
 RN 7664-38-2 HCA  
 CN Phosphoric acid (CA INDEX NAME)



CC 15 (Soils, Fertilizers, and Agricultural Poisons)

IT Alkali metal phosphates

**Fertilizers**

Guano

Phosphates

Slags

(**phosphoric acid** detn. in)

IT **Fertilizers**

(placement of, detn. of)

IT **7664-38-2, Phosphoric acid**

(detn. of)

IT 10103-46-5, Calcium phosphate

(**phosphoric acid** detn. in)

L35 ANSWER 35 OF 41 HCA COPYRIGHT 2009 ACS on STN

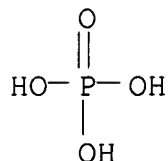
21:6353 Original Reference No. 21:787a-d Iodometric **phosphoric acid** determination in plant products and agricultural soils.

Frodl, Friedrich Chemiker-Zeitung, 50, 825-7,839-40,868-9 (Unavailable) **1926**. CODEN: CMKZAT. ISSN: 0009-2894.

AB Results are described in detail of expts. on the adaptation of Artmann's iodometric method (C. A. 4, 1442) to the detn. of  $\text{P}_2\text{O}_5$  in plant products and in soils. The method is based on the quant. decompn. of the  $\text{NH}_3$  of  $(\text{NH}_4)_3\text{PO}_4 \cdot 12\text{MoO}_3$  by  $\text{NaOBr}$  and titration of the  $\text{I}_2$  liberated from  $\text{KI}$  by the excess of  $\text{NaOBr}$ . Oxalic acid finally proved the most satisfactory for acidifying the reaction mixt., since it forms complexes with **MoO<sub>3</sub>**, preventing reduction of the latter by  $\text{HI}$ , and since it is not attacked by  $\text{I}$ ,

allowing the quant. liberation of the latter. By the addn. of excess KI and excess (COOH)<sub>2</sub> oxidation of the latter is so slow as to be negligible. However, the method is not reliable for such materials as **fertilizers** where larger amts. of stronger NaOBr would have to be employed. For plant materials the sample (5, 10 or 20 g.) is ashed wet with HNO<sub>3</sub> and H<sub>2</sub>SO<sub>4</sub>, the P<sub>2</sub>O<sub>5</sub> pptd. with sulfate-molybdate soln. by Lorenz 's method, the filtered, washed and dried ppt. treated with an excess of standard NaOBr (8 cc.) and 0.5 N NaOH added drop by drop until soln. is complete. When the evolution of N has ceased, 0.5-0.75 g. of KI and 50 cc. of approx. 2 N (COOH)<sub>2</sub> are added and after 5 min. the liberated I<sub>2</sub> is titrated with 0.1 N Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>. For soils a 25-g. sample is boiled 0.5 hr. with 200 cc. of HNO<sub>3</sub> (d. 1.2), dild. with water, cooled, treated with 10 cc. of concd. H<sub>2</sub>SO<sub>4</sub>, made up to a vol. of 500 cc. and the P<sub>2</sub>O<sub>5</sub> detd. as described for plant materials. The results by this method checked well with detns. made gravimetrically by Lorenz's method. For further details of analytical procedure and precautions to be exercised the original should be consulted.

IT **7664-38-2, Phosphoric acid**  
 (detn. of, in plants and soils)  
 RN 7664-38-2 HCA  
 CN Phosphoric acid (CA INDEX NAME)



CC 15 (Soils, Fertilizers, and Agricultural Poisons)  
 IT Plants  
 (phosphoric acid detn. in)  
 IT **7664-38-2, Phosphoric acid**  
 (detn. of, in plants and soils)

L35 ANSWER 36 OF 41 HCA COPYRIGHT 2009 ACS on STN  
 13:13684 Original Reference No. 13:2722b-i,2723a-b The determination of phosphoric oxide, particularly in **fertilizers**, soil extracts and the like. de Coligny Marchand, Bernard South African Journal of Science, 15, 357-63 (Unavailable) **1919**. CODEN: SAJSAR. ISSN: 0038-2353.  
 AB The method as here described is due to the late H. J. Vipond and is a combination of von Lorenz's method of pptn. for NH<sub>4</sub> phosphomolybdate and Pemberton's volumetric method for the detn. of the ppt. The von Lorenz method departs from the usual method of pptg. the NH<sub>4</sub> phosphomolybdate, in that no NH<sub>4</sub>NO<sub>3</sub> is used, while (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> is used instead. Soln. of the B<sub>2</sub>O<sub>5</sub> may be made by any of

the methods generally employed, e. g., boiling the substance with  $\text{HNO}_3$  or the soil exts. may be ignited and ground. The reagents required are: (1) Sulfate-molybdate reagent: Prepare by dissolving 300 g. of  $\text{NH}_4$  molybdate in 1 l. of water, and pour the soln. in a thin stream into 1 l. of  $\text{HNO}_3$  (1.36), in which 100 g. of  $(\text{NH}_4)_2\text{SO}_4$  has been dissolved. The mixt. is allowed to stand in the dark for 48 hrs., the clear soln. decanted or filtered off, and kept in brown, glass-stoppered bottles in the dark. (2) Sulfuric-nitric acid mixt.: 30 cc. of  $\text{H}_2\text{SO}_4$ , (1.84) are added to 1 l. of  $\text{HNO}_3$  (1.20). (3) Nitric acid (1.20). (4) Sodium nitrate, 3% soln. The pptn. is carried out as follows: 10 to 25 cc. of the soln. to be analyzed, corresponding to 0.1 to 0.25 g. of the original substance, are placed in a beaker of about 250 cc. capacity. If the soln. is made with  $\text{HNO}_3$ , sufficient of the  $\text{H}_2\text{SO}_4$ - $\text{HNO}_3$  mixt., and if the soln. is made with  $\text{H}_2\text{SO}_4$ , sufficient of the  $\text{HNO}_3$  (1.20), is added to bring the vol. of the liquid in the beaker up to exactly 50 cc., i. e., if 10 cc. of a soln. made with  $\text{HNO}_3$  is taken, 40 cc. of the  $\text{H}_2\text{SO}_4$ - $\text{HNO}_3$  mixt. must be added, or if 25 cc. of a soln. made with  $\text{H}_2\text{SO}_4$  be taken, 25 cc. of  $\text{HNO}_3$  (1.20) must be added. The soln. is heated on a wire gauze until the first appearance of bubbles; then the beaker is removed from the flame and rotated for a few seconds to prevent the sides of the beaker from being overheated. 50 cc. of the molybdate reagent are then added rapidly, without allowing it to come in contact with the sides of the beaker. The beaker is allowed to stand for a few min., not more than 5, and then rotated rapidly for about 1/2 min. The mixt. is allowed to stand for 2 to 18 hrs. (in practice overnight is convenient) and filtered off at the pump through a Gooch crucible fitted with a circular disk of filter paper. The ppt. is washed with the 3%  $\text{NaNO}_3$  soln. until the washings are free from acid. The ppt. together with the filter paper is transferred to the beaker in which the pptn. took place, by means of the  $\text{NaNO}_3$  soln., and dissolved in a slight excess of standard  $\text{NaOH}$  soln. About 0.5 cc. of phenolphthalein soln. (1%) is added, and the excess of  $\text{NaOH}$  titrated back with standard acid.  $\text{HCl}$ ,  $\text{HNO}_3$  or  $\text{H}_2\text{SO}_4$ , may be used. M. ascertained the exact relation between 0.1 N alkali and the  $\text{NH}_4$  phosphomolybdate ppt. as obtained by the von Lorenz method. The equation for the reaction is as follows:  $(\text{NH}_4)_6\text{P}_2\text{O}_8 \cdot 24 \text{ MoO}_3 \cdot 4 \text{ HNO}_3 \cdot 2 \text{ H}_2\text{O} + 50 \text{ NaOH} = 2(\text{NH}_4)_2\text{HPO}_4 + (\text{NH}_4)_2\text{MoO}_4 + 23 \text{ Na}_2\text{MoO}_4 + 4 \text{ NaNO}_3 + 28 \text{ H}_2\text{O}$ . The compn. of the ppt.  $(\text{NH}_4)_3\text{PO}_4 \cdot 12 \text{ MoO}_3 \cdot 2 \text{ HNO}_3 \cdot \text{H}_2\text{O}$  is given according to Hundeshagen. The mean factor as calcd. from amts. of P205 theoretically present is 0.000284 while that calcd. from the amts. of P205, found by the gravimetric method is 0.000285. The mean ratio of  $\text{NaOH}$  to P206 is 49.8: 1, a close approximation to the theoretical ratio of 50:1 deduced from Hundeshagen's formula. The ratio of 50 mols. of  $\text{NaOH}$  to one mol. of P205 is correct and the factor for conversion of cc. of 0.2 N  $\text{NaOH}$  to g. of P205 is 0.000284. It is necessary to perform the soln. of the  $\text{NH}_4$

phosphomolybdate in NaOH as rapidly as possible, and titrate back with acid without delay. A large excess of NaOH is to be avoided due to the danger of loss of  $\text{NH}_3$ . The large quantity of indicator is necessitated by the obscuring of the end point in the presence of  $\text{NH}_4$  salts. The author believes that the method is capable of greater accuracy than methods in which the  $\text{P}_2\text{O}_5$  is weighed as Mg pyrophosphate. A note is also appended for the recovery of  $\text{NH}_4$  molybdate from residues.

CC 15 (Soils, Fertilizers, and Agricultural Poisons)

IT **Fertilizers**

(phosphoric acid detn. in)

L35 ANSWER 37 OF 41 HCA COPYRIGHT 2009 ACS on STN

8:9857 Original Reference No. 8:1478d-h Application of the titrimetric method of Pemberton to the analysis of all **fertilizers** containing phosphates. Ledoux, L. Bulletin des Societes Chimiques Belges, 27, 170-2 (Unavailable) **1914**. CODEN: BSCBAG. ISSN: 0037-9646.

AB L. has previously shown that  $\text{P}_2\text{O}_5$ , may be pptd. in the cold by  $(\text{NH}_4)_2\text{MoO}_4$  (use of a mechanical shaker); values in agreement with those of the most exact methods are obtained when the ppt. (which is absolutely pure and free from **MoO}\_3**) is treated by the Pemberton method. The soln. of KOH is such that 1 cc. corresponds to 1 mg.  $\text{P}_2\text{O}_5$  and the  $\text{H}_2\text{SO}_4$  soln. is of equiv. conc. The following procedure is employed for various phosphate-containing materials: For superphosphates (a) take 25 cc. of the aq. and citrate solns., add several drops of a conc.  $\text{Fe}_2\text{Cl}_6$  soln. and 15 cc. conc.  $\text{HNO}_3$ ; boil 10 min., cool and add 10 cc.  $\text{NH}_4\text{OH}$  (sp. gr. 0.920); cool, mix with 100 cc. molybdic soln. and place in mechanical shaker. For detn. of total  $\text{P}_2\text{O}_5$  in phosphate slags (b) place 5 g. slag in 500 cc. flask and boil with 10 cc. conc.  $\text{HNO}_3$  and 20 cc. conc.  $\text{HCl}$  until  $\text{SiO}_2$  is pptd.; complete vol. to 500 cc. with dist.  $\text{H}_2\text{O}$  and remove 25 cc.; add a slight excess of  $\text{NH}_4\text{OH}$ , redissolve (with a little  $\text{HNO}_3$  the ppt. formed, add 5 cc. 10% citric acid soln. and 10 cc. conc.  $\text{HNO}_3$ , boil 10 min., cool and add 10 cc.  $\text{NH}_4\text{OH}$  (sp. gr. 0.920); cool, dil. and place in shaker with 100 cc.  $(\text{NH}_4)_2\text{MoO}_4$  soln. For mineral phosphates (c) proceed as for slags. For detn. in slags (d) of  $\text{P}_2\text{O}_5$  sol. in 2% citric acid soln. (Wagner method) take 25 cc. of the citric acid soln., add 15 cc. conc.  $\text{HNO}_3$  boil 10 min., cool, add 10 cc.  $\text{NH}_4\text{OH}$  (sp. gr. 0.920) and place in shaker with 100 cc.  $(\text{NH}_4)_2\text{MoO}_4$  soln.; agitation should continue 1/2 hr. The treatment of the phosphomolybdate ppt. is as follows: collect the ppt. on a 9 cm. filter and wash first with 1 %  $\text{HNO}_3$  and finally with pure  $\text{H}_2\text{O}$  (about 100 cc. are required) until complete disappearance of acidity; the ppt. obtained as above described is cryst. and insol. in  $\text{H}_2\text{O}$ , so there is no loss incurred in washing. Place the ppt. in the pptn. flask, add a little dist.  $\text{H}_2\text{O}$  and finally 50 cc. standard KOH soln. and titrate excess of the latter with  $\text{H}_2\text{SO}_4$ .

CC 15 (Soils and Fertilizers)  
IT **Fertilizers**  
(**phosphoric acid** detn. in)  
IT 7723-14-0, Phosphorus  
(analysis, detn. in **fertilizers**)

L35 ANSWER 38 OF 41 HCA COPYRIGHT 2009 ACS on STN

3:171 Original Reference No. 3:33e-h A Modification of the Volumetric Molybdate Method for the Estimation of **Phosphoric Acid** in Acid Phosphates and Commercial **Fertilizers**

. Williams, R. Chem. Eng., 8, 97-9 (Unavailable) 1909.

AB The official method yields high results (often 1% or more) when H<sub>2</sub>SO<sub>4</sub> or acid sulphates are present, and also if more than 35 cc. (NH<sub>4</sub>)**MoO<sub>4</sub>** solution is used. Arsenic, although it occurs but rarely, is at least partially precipitated. To avoid these errors the author proceeds as follows: Dissolve the material in the most suitable acid, avoiding a great excess, make up to a definite volume, transfer an aliquot part to a tall beaker or Erlenmeyer, add 1 cc. Fe<sub>2</sub>Cl<sub>6</sub> and CaCl<sub>2</sub> solution (10 g. of each to 100 cc.), mix and add NH<sub>4</sub>OH in slight excess. Then pour in about 150 cc. boiling water, shake, allow to settle, filter and wash once with hot water, stirring up the precipitate with the jet of water. Dissolve the ppt. in hot dilute HNO<sub>3</sub> (7 cc. HNO<sub>3</sub>, d. 1.42, in 100) catching the filtrate in the vessel in which precipitation was made, and washing with the acid till the solution measures about 100-125 cc. Nearly neutralize with NH<sub>4</sub>OH, add 30-35 cc. (NH<sub>4</sub>)**2MoO<sub>4</sub>** solution, gently rotating the hot liquid all the time, shake about 1 min., allow to settle (about 10 min.) and filter through the same filter used at first. From this point the treatment is the same as usual. Analyses of several **fertilizers**, and of laboratory mixtures containing known amounts of P<sub>2</sub>O<sub>5</sub>, show excellent agreement between the official gravimetric method and the above volumetric. The official volumetric gave high results in nearly every case.

CC 7 (Analytical Chemistry)  
IT **Fertilizers**  
(**phosphoric acid** detn. in)  
IT 7723-14-0, Phosphorus  
(analysis, detn. in **fertilizers**)

L35 ANSWER 39 OF 41 HCA COPYRIGHT 2009 ACS on STN

0:159224 Snaps determination of the **phosphoric acid** by weighing of the Ammonium phosphormolybdates. [machine translation]. Graftiau, J. (Loewen. Anal. Staatslab.). Bull. de l'Assoc. des Chim. de Sucr. et Dist., 24, 315-20 From: Chem. Zentr., 1906, II, 1737-1738 (Unavailable) 1906.

AB [Machine Translation of Descriptors]. From in usual way the manufactured solutions of the **fertilizers** or phosphates uses content depending upon the P<sub>2</sub>O<sub>5</sub> so much, when substance

corresponds to 0.1-0.4 g. Acidic solutions neutralized with  $\text{NH}_3$  up to the formation precipitation, which is with  $\text{HNO}_3$  again to solve, 10 ccm ammonium CIT advice solution (after PETERMANN) admits and proceeds as with citrate containing solutions. With these one admits directly concentrated  $\text{HNO}_3$ , 10-15 ccm saturated nitrate of ammonia solution and 50-75 ccm water to 2-3 ccm, brings to heating, far away from the flame and gives at one time 60 to 100 ccm molybdenum solution (110 g  $\text{MoO}_3$  are poured in 400 ccm  $\text{NH}_3$  0.96 solved from the density and the solution slowly in 1,5 l  $\text{HNO}_3$  by the density 1.20) and serve with about  $70^\circ$  15-30 min. One sucks the perfectly clear liquid off to largest parts and brings the precipitation into a Gooch crucible, only in the middle part punched and with 2 cm diameters a possessing disk from evenly thick filter paper, as well as with 2 ccm of a mixing into a paste with of paper fibers (1 g filter paper in 1 L water) is fed. One washes 1% with small quantities.  $\text{HNO}_3$ , presses the washed crucibles to a situation filter paper, dries about 2 hours with  $105-110^\circ$  and balances after cooling off in the desiccator. The tare of the paper filter assume as constant, since the small fluctuations are not possible with the high weight precipitation. Precipitation of + 0,0375 = P205. The check analyzes show very satisfactory agreement with the CIT advice method for superphosphates and mix **fertilizers**, with molybdenum method of SONNENSCHNEIN (after Methodes de convention pour l'analyse D. material of **fertilisantes** etc. Luxembourg was found less 1904) on the average 0.54%. The procedure of SONNENSCHNEIN leads however after author to wrong results, since the precipitation of  $\text{Mg}_2\text{P}_2\text{O}_7$  always contains a substantial quantity of trimagnesium phosphate.

CC 7 (Analytical Chemistry)

L35 ANSWER 40 OF 41 HCA COPYRIGHT 2009 ACS on STN

0:152968 For the Determination of the **Phosphoric Acid**

in **Fertilizers** as Phosphorus Molybdenum Acid Anhydride.

[machine translation]. Berju, Georg (Berlin. Agron.-pedol. Inst. d. landw. Hochschule). Landwirtschaftliche Jahrbuecher, 54, 31-46

From: Chem. Zentr., 1906, I, 1049 (Unavailable) **1906**.

CODEN: LWSJAK.

AB [Machine Translation of Descriptors]. Comparative investigations on the determination of the P205 after of P. NEUMANN (Z. f. anal. Ch. vo. 37, pg. 303; C. vo. 98, II. pg. 379) suggested the procedure of weighing by annealing yellow molybdenum precipitate of the received black anhydride and after some other procedure resulted in: 1. The methods examined here, which aim at a simplification of the investigation by direct precipitation of the P205 as  $\text{MgNH}_4\text{P}_2\text{O}_7$ , resulted in nearly permeable to high results. 2. The determination as 24  $\text{MoO}_3$ .cntdot.P205 after P. NEUMANN resulted in very exact results without exception, also the application of the different solvents for the solution of the P205 from the

**fertilizers** concerned, as well as the present dissolved SiO<sub>2</sub> in HCl or citric acid solution without influence on the accuracy. 3. The NEUMANN method is at least so simple and in equal short time feasible, as the direct regulation procedures of the P<sub>2</sub>O<sub>5</sub> as Mg<sub>2</sub>P<sub>2</sub>O<sub>7</sub>. 4. With high-per cent phosphates, the precipitation with approximately 100 ccm of the molybdenum solution is recommended. (NH<sub>4</sub>NO<sub>3</sub> containing solution after WAGNER-STUTZER) causes to use or determine only 0.25 g substance.

CC 7 (Analytical Chemistry)

L35 ANSWER 41 OF 41 HCA COPYRIGHT 2009 ACS on STN

0:48507 A gravimetric method of estimating **phosphoric acid** as ammonium phosphomolybdate. Gladding, Thomas S. Journal of the American Chemical Society, 18(1), 23-7 (English) 1896. CODEN: JACSAT.

AB The estimation of **phosphoric acid** by weighing the yellow precipitate of ammonium phosphomolybdate has been attempted, but except in iron analysis, where the amount of phosphorus is very small, such a method has never yet been successful. Thus, a method of procedure that yields a precipitate of a very uniform composition and would seem to afford the simplest and easiest method yet presented for estimating **phosphoric acid** is described. In this method, the formation of a pure granular precipitate of uniform composition and free from occluded salts, is obtained by the gradual addition drop by drop of the molybdate solution with constant stirring. The completeness of the precipitation of the **phosphoric acid** is attained by the presence of a large amount of ammonium nitrate. The separation of molybdic oxide or iron salt is avoided by the low temperature employed. An application of this method to the direct determination of reverted or citrate soluble **phosphoric acid** promises good results.

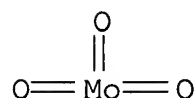
IT 1313-27-5, Molybdic oxide 7664-38-2,

**Phosphoric acid**

(gravimetric method of estimating **phosphoric acid** as ammonium phosphomolybdate)

RN 1313-27-5 HCA

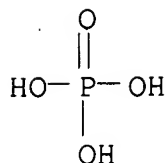
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



RN 7664-38-2 HCA

CN Phosphoric acid (CA INDEX NAME)





CC 7 (Analytical Chemistry)

IT Combustion

**Fertilizers**

(gravimetric method of estimating **phosphoric acid** as ammonium phosphomolybdate)

IT 1344-70-3, Copper oxide 7632-50-0, Ammonium citrate

(gravimetric method of estg. **phosphoric acid** as ammonium phosphomolybdate)

IT 56-81-5, Glycerol **1313-27-5**, Molybdic oxide 1314-56-3,  
Phosphorus pentoxide 1333-74-0, Hydrogen 6484-52-2, Ammonium  
nitrate 7439-89-6, Iron **7664-38-2**, **Phosphoric acid** 7664-41-7, Ammonia 7664-93-9, Sulfuric acid  
7697-37-2, Nitric acid 7732-18-5, Water 7782-91-4, Molybdic acid  
12704-86-8, Ammonium phosphomolybdate  
(gravimetric method of estimating **phosphoric acid** as ammonium phosphomolybdate)

=> D L36 1-18 CBIB ABS HITSTR HITIND

L36 ANSWER 1 OF 18 HCA COPYRIGHT 2009 ACS on STN

142:176086 Glassy and glassy crystalline microfertilizers containing antibacterial elements. Rangelova, N.; Samuneva, B.; Djambaski, P.; Bozadjiev, P.; Kashchieva, E. (University of Chemical Technology and Metallurgy, Sofia, 1756, Bulg.). Journal of the University of Chemical Technology and Metallurgy, 38(4), 1263-1270 (English) **2003**. CODEN: JUCTB3. ISSN: 1311-7629. Publisher: University of Chemical Technology and Metallurgy.

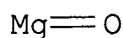
AB During the last years an increasing interest has been shown in controlled-release glasses which can be successfully applied with considerable ecol. effect in the agriculture and human and veterinary medicine. In the present work glassy and glassy-cryst. materials of the SiO<sub>2</sub>-P<sub>2</sub>O<sub>5</sub>-B<sub>2</sub>O<sub>3</sub>-K<sub>2</sub>O system contg. the antibacterial elements Ag, Zn and Cu and the micronutrients Mn, Fe, Mo, B and Mg have been synthesized. It was proved that these materials are suitable for practical use because they can supply the plants with the nutritive and antibacterial elements for a long or short period of time in dependence of their chem. compn. and granularity.

IT **1309-48-4, Magnesium oxide (MgO)**, biological studies **1313-27-5, Molybdenum**

**oxide (MoO<sub>3</sub>)**, biological studies  
 (glass, borophosphosilicate; glassy and glassy-cryst.  
 borophosphosilicate materials as micronutrient  
**fertilizers** contg. antibacterial elements)

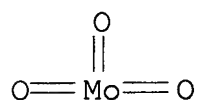
RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA

CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 5, 57

ST borophosphosilicate glass trace element **fertilizer**  
 antibacterial

IT Trace elements, biological studies  
 (antibacterial; glassy and glassy-cryst. borophosphosilicate  
 materials as micronutrient **fertilizers** contg.  
 antibacterial elements)

IT **Fertilizers**  
 (controlled-release, trace elements; glassy and glassy-cryst.  
 borophosphosilicate materials as micronutrient  
**fertilizers** contg. antibacterial elements)

IT Antibacterial agents  
 (glassy and glassy-cryst. borophosphosilicate materials as  
 micronutrient **fertilizers** contg. antibacterial  
 elements)

IT Trace element nutrients  
 (glassy and glassy-cryst. borophosphosilicate materials as  
 micronutrient **fertilizers** contg. antibacterial  
 elements)

IT Dissolution  
 (of trace element-contg. glassy **fertilizers**)

IT Borophosphosilicate glasses  
 (potassium borophosphosilicate; glassy and glassy-cryst.  
 borophosphosilicate materials as micronutrient  
**fertilizers** contg. antibacterial elements)

IT 1309-37-1, Ferric oxide, biological studies **1309-48-4**,  
**Magnesium oxide (MgO)**, biological  
 studies **1313-27-5**, **Molybdenum oxide (**  
**MoO<sub>3</sub>)**, biological studies 1314-13-2, Zinc oxide (ZnO),

biological studies 1317-38-0, Cupric oxide, biological studies  
1344-43-0, Manganous oxide, biological studies 20667-12-3, Silver  
oxide (Ag<sub>2</sub>O)

(glass, borophosphosilicate; glassy and glassy-cryst.

borophosphosilicate materials as micronutrient

**fertilizers** contg. antibacterial elements)

IT 7439-89-6, Iron, biological studies 7439-95-4, Magnesium,  
biological studies 7439-96-5, Manganese, biological studies  
7439-98-7, Molybdenum, biological studies 7440-22-4, Silver,  
biological studies 7440-42-8, Boron, biological studies  
7440-50-8, Copper, biological studies 7440-66-6, Zinc, biological  
studies

(glassy and glassy-cryst. borophosphosilicate materials as  
micronutrient **fertilizers** contg. antibacterial  
elements)

IT 1303-86-2, Boron oxide (B<sub>2</sub>O<sub>3</sub>), uses 1314-56-3, Phosphorus  
pentoxide, uses 7631-86-9, Silica, uses 12136-45-7, Potassium  
oxide, uses

(glassy and glassy-cryst. borophosphosilicate materials as  
micronutrient **fertilizers** contg. antibacterial  
elements)

L36 ANSWER 2 OF 18 HCA COPYRIGHT 2009 ACS on STN

141:259983 Silicate glass as **fertilizer**. Stoch, Leszek;  
Stoch, Zofia; Wacławska, Irena (Akademia Górnictwo-Hutnicza im.  
Stanisława Staszica, Pol.). Pol. PL 185229 B1 **20030430**, 4  
pp. (Polish). CODEN: POXXA7. APPLICATION: PL 1997-324092  
19971229.

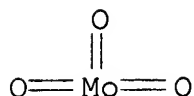
AB The manuf. of silicate glass as Mg-Ca-P **fertilizer** is  
described. The glass is made from low-cost raw materials and  
byproducts of glass industry (serpentine, apatite, peridotite,  
potassium carbonate). The **fertilizer** contains 27 wt.%  
SiO<sub>2</sub>, 15-30 wt.% MgO (SiO<sub>2</sub>/MgO ratio 0.8-1.8),  
0-25 wt.% P<sub>2</sub>O<sub>5</sub>, and 0-20 wt.% K<sub>2</sub>O; CaO is present to  
provide CaO/MgO ratio ≥0.8. The glass  
can addnl. contain microelements (Cu, Zn, B, Mn, Mo) added mostly as  
oxides and fungicides in total amt. of ≤10 wt.%. The glass  
is crushed to particle size 0.1-0.3 mm for field application.

IT **1313-27-5, Molybdenum oxide**, biological  
studies

(silicate glass manuf. for use as Mg-Ca-P **fertilizer**  
with microelements)

RN 1313-27-5 HCA

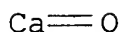
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



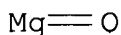
- IC ICM C05D009-00  
ICS C03C003-062
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)
- ST silicate glass **fertilizer** manuf
- IT Apatite-group minerals
- Fertilizers**
- Peridotite
- Serpentinite
- Silicate glasses
- (silicate glass manuf. for use as Mg-Ca-P **fertilizer** with microelements)
- IT 584-08-7, Potassium carbonate 1303-86-2, Boron oxide (B<sub>2</sub>O<sub>3</sub>), biological studies 1313-13-9, Manganese oxide, biological studies **1313-27-5, Molybdenum oxide**, biological studies 1314-13-2, Zinc oxide (ZnO), biological studies 1317-38-0, Copper oxide, biological studies 7439-95-4, Magnesium, biological studies 7439-96-5, Manganese, biological studies 7439-98-7, Molybdenum, biological studies 7440-09-7, Potassium, biological studies 7440-42-8, Boron, biological studies 7440-50-8, Copper, biological studies 7440-66-6, Zinc, biological studies 7440-70-2, Calcium, biological studies 7631-86-9, Silica, biological studies 7723-14-0, Phosphorus, biological studies 10043-35-3, Boric acid, biological studies
- (silicate glass manuf. for use as Mg-Ca-P **fertilizer** with microelements)
- L36 ANSWER 3 OF 18 HCA COPYRIGHT 2009 ACS on STN
- 139:116829 Biochemical activity of glassy **fertilizers**.  
Waclawska, Irena; Stoch, Leszek; Ostrowska, Janina (Wydz. Inz. Mater. i Ceramiki, Akad. Gorniczo-Hutnicza, Krakow, 30-059, Pol.). Prace Komisji Nauk Ceramicznych, Ceramika (Polska Akademia Nauk), 66(1, Postepy Technologii Ceramiki, Szkla i Budowlanych Materialow Wiazacych), 169-175 (Polish) **2001**. CODEN: PKNCE6. ISSN: 0860-3340. Publisher: Polskie Towarzystwo Ceramiczne.
- AB Glasses of the K<sub>2</sub>O-MgO-CaO-P<sub>2</sub>O<sub>5</sub>-SiO<sub>2</sub> system contg. trace elements (MnO, CuO, B<sub>2</sub>O<sub>3</sub>, **MoO<sub>3</sub>**, ZnO, Fe<sub>2</sub>O<sub>3</sub>) which act as controlled-release **fertilizers** were studied. The biochem. activity of glasses was estd. on the basis on their soly. in soils differing in temp., pH value, content of nutrients, and amt. of plant roots (in-vivo expts.). It has been found that the mechanism of biochem. activity of glassy **fertilizers** is based on their incongruent dissoln. It comprises gradual

destruction of the internal structure of glasses under the influence of active components of soil and washing out of the glass components. Near the glass-soln. interphase boundary, a layer of metastable solid products is formed. These compds. bind a considerable part of the cations-glass modifiers; subsequently they also undergo gradual dissoln. The succession of washing out of the glass components depends on strengths of the oxygen bridges combining these components in the glass structure.

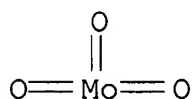
IT **1305-78-8, Calcium oxide (CaO)**  
 ), biological studies **1309-48-4, Magnesium oxide (MgO)**, biological studies  
 (glass, phosphosilicate; dissoln. of glassy **fertilizers** and controlled release of nutrients)  
 RN 1305-78-8 HCA  
 CN Calcium oxide (CaO) (CA INDEX NAME)



RN 1309-48-4 HCA  
 CN Magnesium oxide (MgO) (CA INDEX NAME)



IT **1313-27-5, Molybdenum oxide (MoO<sub>3</sub>)**, biological studies  
 (glasses contg.; dissoln. of glassy **fertilizers** and controlled release of nutrients)  
 RN 1313-27-5 HCA  
 CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 Section cross-reference(s): 57  
 ST phosphosilicate glass **fertilizer** dissoln nutrient release;  
 trace element glass controlled release **fertilizer**  
 IT **Fertilizers**  
 (controlled-release, glassy; dissoln. of glassy **fertilizers** and controlled release of nutrients)  
 IT Mineral elements, biological studies  
 Phosphosilicate glasses  
 Trace element nutrients  
 (dissoln. of glassy **fertilizers** and controlled release

- of nutrients)
- IT Dissolution  
(glassy **fertilizer** dissoln. and controlled release of nutrients)
- IT 7439-89-6, Iron, biological studies 7439-95-4, Magnesium, biological studies 7439-96-5, Manganese, biological studies 7439-98-7, Molybdenum, biological studies 7440-09-7, Potassium, biological studies 7440-21-3, Silicon, biological studies 7440-42-8, Boron, biological studies 7440-50-8, Copper, biological studies 7440-70-2, Calcium, biological studies 7723-14-0, Phosphorus, biological studies  
(dissoln. of glassy **fertilizers** and controlled release of nutrients)
- IT **1305-78-8, Calcium oxide (CaO)**, biological studies **1309-48-4, Magnesium oxide (MgO)**, biological studies 1314-56-3, Phosphorus oxide (P2O5), biological studies 7631-86-9, Silica, biological studies 12136-45-7, Potassium oxide (K2O), biological studies  
(glass, phosphosilicate; dissoln. of glassy **fertilizers** and controlled release of nutrients)
- IT 1303-86-2, Boron oxide (B2O3), biological studies 1309-37-1, Ferric oxide, biological studies **1313-27-5, Molybdenum oxide (MoO3)**, biological studies 1314-13-2, Zinc oxide (ZnO), biological studies 1317-38-0, Cupric oxide, biological studies 1344-43-0, Manganous oxide, biological studies  
(glasses contg.; dissoln. of glassy **fertilizers** and controlled release of nutrients)
- L36 ANSWER 4 OF 18 HCA COPYRIGHT 2009 ACS on STN
- 137:124730 Method for treatment of excrements and sludges, carbonized products obtained by the method, and **fertilizers** using the carbonized products. Takamura, Shuichi (Japan). Jpn. Kokai Tokkyo Koho JP 2002219497 A **20020806**, 10 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 2001-19303 20010126.
- AB Sewage sludges are mixed with materials contg. **CaO** and perlite and the mixts. are carbonized to give carbonized products, useful for **fertilizers**, soil amendmets, deodorizing agents, adsorbents, etc. Excrements (10 L) of cows were stirred with 1100 g **CaO** and 300 g expanded perlite for wt. redn. to .apprx.40 wt.% and carbonized at 450° for 60 min to give carbonized products (wt. reduced to approx. 5-10%) showing no unpleasant odor and 92% removal of NH3 from air.
- IT **1305-78-8, Calcium oxide**, biological studies  
(carbonization of excrements and sludges with **CaO** and perlite for **fertilizers**, adsorbents and deodorizing

agents)  
 RN 1305-78-8 HCA  
 CN Calcium oxide (CaO) (CA INDEX NAME)

Ca=O

IT **11098-99-0, Molybdenum oxide**  
 (photocatalyst; carbonization of excrements and sludges with  
**CaO** and perlite for **fertilizers**, adsorbents and  
 deodorizing agents)  
 RN 11098-99-0 HCA  
 CN Molybdenum oxide (CA INDEX NAME)  
 \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 IC ICM C02F011-10  
 ICS B01D053-86; B01J021-18; B01J032-00; B01J035-02; C01B031-10;  
 C05G003-00  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 Section cross-reference(s): 59, 60  
 ST excrement sludge carbonization quicklime perlite **fertilizer**  
 ; soil amendment manure carbonization perlite quicklime;  
 deodorization adsorbent excrement carbonization quicklime perlite  
 IT Adsorbents  
 Carbonization  
 Deodorants  
 Manure  
 Photolysis catalysts  
 Sludges  
 Soil amendments  
 (carbonization of excrements and sludges with **CaO** and  
 perlite for **fertilizers**, adsorbents and deodorizing  
 agents)  
 IT Perlite  
 (carbonization of excrements and sludges with **CaO** and  
 perlite for **fertilizers**, adsorbents and deodorizing  
 agents)  
 IT **Fertilizers**  
 (carbonization of excrements and sludges with **CaO** and  
 perlite for **fertilizers**, adsorbents and deodorizing  
 agents)  
 IT Air purification  
 (deodorization; carbonization of excrements and sludges with  
**CaO** and perlite for **fertilizers**, adsorbents and  
 deodorizing agents)  
 IT Oxides (inorganic), biological studies  
 (photocatalysts; carbonization of excrements and sludges with  
**CaO** and perlite for **fertilizers**, adsorbents and  
 deodorizing agents)

- IT **1305-78-8, Calcium oxide**, biological studies  
(carbonization of excrements and sludges with **CaO** and perlite for **fertilizers**, adsorbents and deodorizing agents)
- IT 1304-76-3, Bismuth oxide, biological studies 1306-19-0, Cadmium oxide, biological studies 1310-53-8, Germanium oxide, biological studies 1313-96-8, Niobium oxide 1314-13-2, Zinc oxide, biological studies 1314-23-4, Zirconium oxide, biological studies 1314-35-8, Tungsten oxide, biological studies 1314-61-0, Tantalum oxide 1332-29-2, Tin oxide 1332-37-2, Iron oxide, biological studies 1335-25-7, Lead oxide 1344-70-3, Copper oxide  
**11098-99-0, Molybdenum oxide**  
11099-11-9, Vanadium oxide 11104-61-3, Cobalt oxide 11113-84-1, Ruthenium oxide 11118-57-3, Chromium oxide 11129-60-5, Manganese oxide 12060-59-2, Strontium titanate 12624-27-0, Rhenium oxide 12680-36-3, Rhodium oxide 13463-67-7, Titanium oxide, biological studies  
(photocatalyst; carbonization of excrements and sludges with **CaO** and perlite for **fertilizers**, adsorbents and deodorizing agents)
- L36 ANSWER 5 OF 18 HCA COPYRIGHT 2009 ACS on STN  
136:371788 Drought-resistant nutrients for plants. Yao, Shishun; Zhao, Yue; Hai, Bo (Zhongzuo Group Co., Ltd., Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1316403 A **20011010**, 5 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 2001-114699 20010516.
- AB The title nutrients are composed of water-absorbing resins(e.g., polyacrylates, 40-60 mesh, water absorptivity 600-850 g/g) 30-50, org. microorganism **fertilizers**(e.g., fermented manures) 30-50, inorg. **fertilizers** 9-25, and phytohormone(e.g., humic acids) 1-5 wt.%.
- IT **1309-48-4, Magnesia**, uses **11098-99-0, Molybdenum oxide**  
(in drought-resistant nutrients for plants)
- RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

- RN 11098-99-0 HCA  
CN Molybdenum oxide (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
IC ICM C05F011-08  
ICS B01J020-26; A01N065-00  
CC 48-11 (Unit Operations and Processes)



Section cross-reference(s): 19

IT 57-13-6, Urea, uses **1309-48-4, Magnesia**, uses  
 1314-13-2, Zinc oxide, uses 1314-56-3, Phosphorus oxide, uses  
 1332-37-2, Iron oxide, uses 1344-70-3, Copper oxide 9003-01-4D,  
 Polyacrylic acid, salts 10043-35-3, Boric acid, uses  
**11098-99-0, Molybdenum oxide**  
 11129-60-5, Manganese oxide 12136-45-7, Potassium oxide, uses  
 26445-01-2, Naphthyl acetic acid  
 (in drought-resistant nutrients for plants)

L36 ANSWER 6 OF 18 HCA COPYRIGHT 2009 ACS on STN

135:92074 Germanium and selenium-enriched glass **fertilizer** and  
 the method for producing the same. Zhao, Shanmao; Zhang, Zhao;  
 Xiao, Dazhuang (Peop. Rep. China). PCT Int. Appl. WO 2001049636 A1  
**20010712**, 17 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT,  
 AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CR, CU, CZ, DE, DK, DM, DZ,  
 EE, ES, FI, GB, GD, GE, GH; GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
 KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,  
 MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI; RW: AT, BE, BF, BJ, CF,  
 CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC,  
 ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Chinese). CODEN: PIXXD2.  
 APPLICATION: WO 2001-CN8 20010104. PRIORITY: CN 2000-100070  
 20000104.

AB The present invention relates to a germanium and selenium-enriched  
 glass **fertilizer** which fly-ash acts as the main component  
 and the prodn. method. The process comprises adding coals and  
 vitrified additives into boiler and burning to obtain flue gases  
 which include germanium and selenium-enriched hyaline fly-ash, then  
 cooling and sepg. in the duster to obtain a germanium and  
 selenium-enriched hyaline material, the processing to a germanium  
 and selenium-enriched glass **fertilizer**. After being  
 denitrified, desulfurized and defluorinated, the flue gases are  
 discharged into air. The method is simple, and the products can be  
 used as functional glass **fertilizer**, and as the industrial  
 material for producing selenium and germanium. The process is one  
 of the complex utilization methods of coal slags.

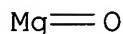
IT **1305-78-8, Calcium oxide**, biological  
 studies **1309-48-4, Magnesium oxide**,  
 biological studies **1313-27-5, Molybdenum**  
**oxide**, biological studies  
 (germanium and selenium-enriched glass **fertilizer** and  
 the method for producing the same)

RN 1305-78-8 HCA

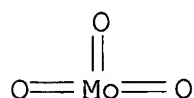
CN Calcium oxide (CaO) (CA INDEX NAME)

Ca=O

RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



IC C05G003-00; C05G001-00; C05D009-02; C03C006-10  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 60  
ST germanium selenium glass **fertilizer** manuf  
IT Slags  
(coal-combustion; germanium and selenium-enriched glass  
**fertilizer** and the method for producing the same)  
IT Ashes (residues)  
(fly; germanium and selenium-enriched glass **fertilizer**  
and the method for producing the same)  
IT Glass, biological studies  
(germanium and selenium-enriched glass **fertilizer** and  
the method for producing the same)  
IT **Fertilizers**  
(germanium and selenium-enriched glass **fertilizer** and  
the method for producing the same)  
IT 1303-86-2, Boron oxide, biological studies **1305-78-8**,  
**Calcium oxide**, biological studies 1307-96-6,  
Cobalt oxide, biological studies 1308-38-9, Chromium oxide,  
biological studies 1309-37-1, Ferric oxide, biological studies  
**1309-48-4**, **Magnesium oxide**, biological  
studies **1313-27-5**, **Molybdenum oxide**,  
biological studies 1313-99-1, Nickel oxide, biological studies  
1314-13-2, Zinc oxide, biological studies 1314-62-1, Vanadium  
oxide, biological studies 1317-38-0, Copper oxide, biological  
studies 1332-29-2, Tin oxide 1344-28-1, Aluminum oxide,  
biological studies 1344-43-0, Manganese oxide, biological studies  
7631-86-9, Silica, biological studies  
(germanium and selenium-enriched glass **fertilizer** and  
the method for producing the same)  
IT 7440-56-4, Germanium, biological studies 7782-49-2, Selenium,  
biological studies  
(germanium and selenium-enriched glass **fertilizer** and  
the method for producing the same)

L36 ANSWER 7 OF 18 HCA COPYRIGHT 2009 ACS on STN

135:76421 Glass **fertilizer** and the method for producing the same. Zhao, Shanmao; Zhang, Zhao; Xiao, Dazhuang (Peop. Rep. China). PCT Int. Appl. WO 2001049635 A1 **20010712**, 19 pp.

DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Chinese). CODEN: PIXXD2. APPLICATION: WO 2001-CN3 20010103. PRIORITY: CN 2000-100008 20000103.

AB The present invention provides a glass **fertilizer** and its prodn. method. The process comprises adding coals and vitrified additives into liq. residual slag boiler and burning at high temps. to obtain a random network body melting glass slurry, quenching the glass slurry with water, drying and grinding, therefore obtaining a powd. glass **fertilizer**. The process is inexpensive and does not cause pollution.

IT **1305-78-8, Calcium oxide**, biological studies **1309-48-4, Magnesium oxide**, biological studies **1313-27-5, Molybdenum oxide**, biological studies **1313-59-3, Sodium oxide**, biological studies (glass **fertilizer** and its prodn. method)

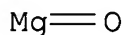
RN 1305-78-8 HCA

CN Calcium oxide (CaO) (CA INDEX NAME)



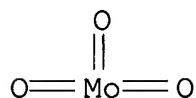
RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA

CN Molybdenum oxide (MoO3) (CA INDEX NAME)



RN 1313-59-3 HCA

CN Sodium oxide (Na2O) (CA INDEX NAME)

Na-O-Na

- IC C05G003-00; C05G001-00; C05D009-02; C03C006-10  
 CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
 ST glass **fertilizer** manuf trace element  
 IT Glass, biological studies  
 Trace elements, biological studies  
 (glass **fertilizer** and its prodn. method)  
 IT Coal, biological studies  
**Fertilizers**  
 (glass **fertilizer** and its prodn. method)  
 IT **1305-78-8, Calcium oxide**, biological studies 1307-96-6, Cobalt oxide, biological studies 1309-37-1, Ferric oxide, biological studies **1309-48-4, Magnesium oxide**, biological studies **1313-27-5, Molybdenum oxide**, biological studies **1313-59-3, Sodium oxide**, biological studies 1313-99-1, Nickel oxide, biological studies 1314-13-2, Zinc oxide, biological studies 1314-56-3, Phosphorus oxide, biological studies 1314-62-1, Divanadium pentaoxide, biological studies 1317-38-0, Copper oxide, biological studies 1332-29-2, Tin oxide 1344-28-1, Aluminum oxide, biological studies 1344-43-0, Manganese oxide, biological studies 7440-42-8, Boron, biological studies 7631-86-9, Silicon dioxide, biological studies 7704-34-9, Sulfur, biological studies 11118-57-3, Chromium oxide 12136-45-7, Potassium oxide, biological studies 16984-48-8, Fluoride, biological studies  
 (glass **fertilizer** and its prodn. method)  
 L36 ANSWER 8 OF 18 HCA COPYRIGHT 2009 ACS on STN  
 132:307800 Glassy **fertilizers** as ecological materials preserving the chemical equilibrium of natural environment. Wacławska, I.; Stoch, L.; Ostrowska, J. (University of Mining and Metallurgy, Krakow, 30-059, Pol.). Prace Komisji Nauk Ceramicznych, Ceramika (Polska Akademia Nauk), 57(Porous and Special Glasses), 221-231 (English) **1998**. CODEN: PKNCE6. ISSN: 0860-3340. Publisher: Polskie Towarzystwo Ceramiczne.  
 AB The subject is mineral **fertilizers** in a glassy phosphosilicate form, with controlled release rate of the useful nutrients, preserving the chem. equil. of natural environment. They may supply phosphorus, potassium, calcium and magnesium and a wide set of microelements (Mn, Cu, B, Mo, Zn, Fe) in a biol. active form, in the amts. needed by the crops, without releasing Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup> ions or other anions, usually hardly tolerated by the plants. Glassy **fertilizers** are sparingly sol. in water, which counteracts the occurrence of losses as it prevents the washing out of nutrients

from the soil. The dissoln. rate of particular macro- and microelements of the glassy **fertilizers** depends on their chem. compn., and it may be controlled over a wide range by appropriate selection of these components. The dissoln. of glassy **fertilizers** in soil solns. proceeds through formation of a diffusion layer of solid products, the chem. of which depends on the soil soln. pH and time of dissoln. This takes place near the interphase boundary glass-soil environment. Exptl. cultivations of plants confirmed that glassy **fertilizers** are able to supply the mineral components needed at various stages of the plant growth and development.

IT 1305-78-8, **Calcium oxide**, biological studies 1309-48-4, **Magnesium oxide**, biological studies 1313-27-5, **Molybdenum trioxide**, biological studies  
(sustained-release phosphosilicate glass **fertilizer** contg.)  
RN 1305-78-8 HCA  
CN Calcium oxide (CaO) (CA INDEX NAME)

Ca=O

RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)

O  
||  
O=Mo=O

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST phosphosilicate glass **fertilizer** soil  
IT Soils  
(sustained-release mechanism of phosphosilicate glass **fertilizers** in soil)  
IT **Fertilizers**  
Phosphosilicate glasses  
(sustained-release mechanism of phosphosilicate glass **fertilizers** in soil)  
IT 1303-86-2, Boron oxide, biological studies 1305-78-8, **Calcium oxide**, biological studies 1309-37-1,

Iron(III) oxide, biological studies **1309-48-4**,  
**Magnesium oxide**, biological studies  
**1313-27-5, Molybdenum trioxide**,  
 biological studies 1314-13-2, Zinc oxide, biological studies  
 1314-56-3, Phosphorus pentoxide, biological studies 1317-38-0,  
 Copper(II) oxide, biological studies 1344-43-0, Manganese  
 monoxide, biological studies 7631-86-9, Silicon dioxide,  
 biological studies 12136-45-7, Potassium oxide, biological studies  
 (sustained-release phosphosilicate glass **fertilizer**  
 contg.)

L36 ANSWER 9 OF 18 HCA COPYRIGHT 2009 ACS on STN

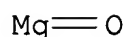
129:15714 Original Reference No. 129:3379a,3382a **Fertilizer**  
 compositions including chelated metal ions. Dean, Frank W. (Stoller  
 Enterprises, Inc., USA). PCT Int. Appl. WO 9821166 A1  
**19980522**, 19 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ,  
 BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL,  
 IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,  
 MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT,  
 UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF,  
 BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU,  
 MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2.  
 APPLICATION: WO 1997-US21180 19971113. PRIORITY: US 1996-30168  
 19961113.

AB The invention is directed to **fertilizer** additives and  
 compns., and to methods for their prepn. and administration to  
 plants. The **fertilizer** additives include chelated metal  
 ions of the transition and alk. earth metals. The chelated metal  
 solns. are prepd. by complexing metal cations using an org. acid and  
 an org. amine. The **fertilizer** additives include a  
 sufficient quantity of amine to maintain the pH above about 7.5 and  
 preferably about 8-11. While the source of the metal ions may be  
 any biol.-acceptable metal salt, the metal oxides are preferred.  
 The preferred chelating agents are citric acid and a difunctional  
 amine. The preferred amines are 2-hydroxyethylamine,  
 dimethylaminopropylamine and mixts. thereof. Additive solns. contg.  
 such chelated metals are stable at alk. pH and are used to prep.  
 clear, liq. **fertilizer** compns. for delivery of trace  
 metals to plants.

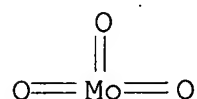
IT **1309-48-4DP, Magnesium oxide**, chelate  
 with 2-hydroxyethylamine, dimethylaminopropylamine and citric acid  
**1313-27-5DP, Molybdc oxide**, chelate with  
 2-hydroxyethylamine, dimethylaminopropylamine and citric acid  
 (**fertilizer** compns. of chelated metal ions)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (CA INDEX NAME)



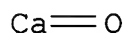
RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



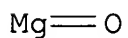
IC ICM C05C011-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST trace element **fertilizer** metal chelate  
IT Amines, biological studies  
(diamines, chelates with metals and citric acid;  
**fertilizer** compns. of chelated metal ions)  
IT **Fertilizers**  
(trace element; **fertilizer** compns. of chelated metal  
ions)  
IT 77-92-9DP, Citric acid, chelates with metals and difunctional amines  
109-55-7DP, chelates with metals and citric acid 141-43-5DP,  
2-Hydroxyethylamine, chelates with metals and citric acid  
**1309-48-4DP, Magnesium oxide**, chelate  
with 2-hydroxyethylamine, dimethylaminopropylamine and citric acid  
**1313-27-5DP**, Molybdic oxide, chelate with  
2-hydroxyethylamine, dimethylaminopropylamine and citric acid  
1314-13-2DP, Zinc oxide, chelate with 2-hydroxyethylamine and citric  
acid 1333-22-8DP, Tribasic copper sulfate, chelate with  
2-hydroxyethylamine and citric acid 7439-89-6DP, Iron, chelates  
with difunctional amines and citric acid, biological studies  
7439-95-4DP, Magnesium, chelates with difunctional amines and citric  
acid, biological studies 7439-96-5DP, Manganese, chelates with  
difunctional amines and citric acid, biological studies  
7439-98-7DP, Molybdenum, chelates with difunctional amines and  
citric acid, biological studies 7440-48-4DP, Cobalt, chelates with  
difunctional amines and citric acid, biological studies  
7440-50-8DP, Copper, chelates with difunctional amines and citric  
acid, biological studies 7440-66-6DP, Zinc, chelates with  
difunctional amines and citric acid, biological studies  
7440-70-2DP, Calcium, chelates with difunctional amines and citric  
acid, biological studies 7447-39-4DP, Copper(II) chloride, chelate  
with 2-hydroxyethylamine, dimethylaminopropylamine and citric acid  
7705-08-0DP, Iron(III) chloride, chelate with 2-hydroxyethylamine,  
dimethylaminopropylamine and citric acid 7720-78-7DP, Iron(II)  
sulfate, chelate with 2-hydroxyethylamine, dimethylaminopropylamine  
and citric acid 7758-98-7DP, Copper sulfate, chelate with

2-hydroxyethylamine, dimethylaminopropylamine and citric acid  
10034-99-8DP, Magnesium sulfate heptahydrate, chelate with  
2-hydroxyethylamine and citric acid 19086-18-1DP, Copper sulfate  
heptahydrate, chelate with 2-hydroxyethylamine and citric acid  
71799-92-3DP, Manganese citrate, chelate with 2-hydroxyethylamine  
and dimethylaminopropylamine  
(**fertilizer** compns. of chelated metal ions)

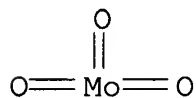
L36 ANSWER 10 OF 18 HCA COPYRIGHT 2009 ACS on STN  
123:206803 Original Reference No. 123:36683a,36686a Glass composition  
for cultivation of plants. Betsupu, Yoshihisa; Oota, Masaaki;  
Yamatsuta, Kiichi (Asahi Fibreglass Co, Japan; Shimadzu Corp). Jpn.  
Kokai Tokkyo Koho JP 07170852 A **19950711** Heisei, 9 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-345456 19931221.  
AB Silica-based glass compn. contains 1-30 wt.% N2 is used as  
**fertilizer** for the cultivation of plants. The glass compn.  
is slowly dissolved by water or acid to supply the necessary  
nutrition to the plants.  
IT **1305-78-8, Calcia**, uses **1309-48-4,**  
**Magnesia**, uses **1313-27-5, Molybdenum**  
**trioxide**, uses **1313-59-3, Sodium**  
**oxide**, uses  
(in glass compn. for cultivation of plants)  
RN 1305-78-8 HCA  
CN Calcium oxide (CaO) (CA INDEX NAME)



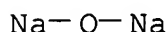
RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)



RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO3) (CA INDEX NAME)



RN 1313-59-3 HCA  
CN Sodium oxide (Na2O) (CA INDEX NAME)





- IC ICM A01G001-00  
ICS C03C003-04; C03C004-00; C05C011-00
- CC 57-1 (Ceramics)  
Section cross-reference(s): 19
- IT 1301-96-8, Silver monoxide 1303-86-2, Boron trioxide, uses  
**1305-78-8, Calcia**, uses 1307-96-6, Cobalt  
monoxide, uses 1308-38-9, Dichromium trioxide, uses 1309-37-1,  
Ferric oxide, uses **1309-48-4, Magnesia**, uses  
1313-13-9, Manganese dioxide, uses **1313-27-5,**  
**Molybdenum trioxide**, uses **1313-59-3,**  
**Sodium oxide**, uses 1314-13-2, Zinc oxide, uses  
1314-56-3, Phosphorus pentoxide, uses 1317-38-0, Cupric oxide,  
uses 1317-39-1, Cuprous oxide, uses 1344-28-1, Alumina, uses  
1344-43-0, Manganese monoxide, uses 1345-25-1, Ferrous oxide, uses  
7446-08-4, Selenium oxide (SeO<sub>2</sub>) 7782-50-5, Chlorine, uses  
12136-45-7, Potassium oxide, uses 20667-12-3, Silver oxide  
(in glass compn. for cultivation of plants)
- L36 ANSWER 11 OF 18 HCA COPYRIGHT 2009 ACS on STN  
116:40455 Original Reference No. 116:6925a,6928a Liquid trace element  
**fertilizer** manufacture, using citric acid manufacture  
wastewaters.. Dankiewicz, Maria; Skowronski, Boleslaw; Sas, Jozef;  
Czuba, Roman; Malczewski, Zbigniew; Wysz, Aleksandra (Instytut  
Nawozow Sztucznych, Pulawy, Pol.). Pol. PL 153485 B2  
**19910430**, 11 pp. Abstracted and indexed from the unexamined  
application (Polish). CODEN: POXXA7. APPLICATION: PL 1989-280900  
19890801.
- AB Liq. Mg-N-K **fertilizers** contains  $\geq 1$  trace element  
in the form of a complex with compds. contained in the effluent from  
the manuf. of citric acid from molasses. The ratio of effluent to  
microelements is 0.2-500:1, preferably 1-15:1.
- IC ICM C05D009-02  
ICS C05G001-00
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)
- ST liq trace element **fertilizer**; waste citrate manuf  
**fertilizer**
- IT Trace elements, biological studies  
(**fertilizers** contg., citric acid manuf. wastewaters in)
- IT Wastewater  
(from citric acid manuf., in trace element **fertilizer**  
prodn.)
- IT **Fertilizers**  
(trace element, effluent from citric acid manuf. in)
- IT 77-92-9P, Citric acid, preparation  
(effluent from manuf. of, in trace element **fertilizer**  
manuf.)
- IT 7439-89-6, Iron, biological studies 7439-96-5, Manganese,

biological studies 7439-98-7, Molybdenum, biological studies  
 7440-42-8, Boron, biological studies 7440-48-4, Cobalt, biological  
 studies 7440-50-8, Copper, biological studies 7440-66-6, Zinc,  
 biological studies 7720-78-7, Ferrous sulfate 7733-02-0, Zinc  
 sulfate 7758-98-7, Cupric sulfate, biological studies 7785-87-7,  
 Manganese sulfate 10026-22-9 10043-35-3, Boric acid (H3BO3),  
 biological studies 11098-84-3, Ammonium **molybdenum**  
**oxide** 12054-85-2 12680-49-8, Molybdenum **sodium**  
**oxide** 37211-00-0, Molybdenum potassium oxide  
 (liq. **fertilizer** contg., effluent from citric acid  
 manuf. in prepn. of)

L36 ANSWER 12 OF 18 HCA COPYRIGHT 2009 ACS on STN

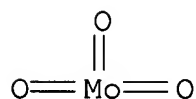
115:278915 Original Reference No. 115:47381a,47384a Manufacture of a  
 new glass **fertilizer** containing trace elements and rare  
 earth elements. Tao, Ying; Cheng, Aihua (Dalian Institute of Light  
 Industry, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai  
 Shuomingshu CN 1051344 A **19910515**, 6 pp. (Chinese).  
 CODEN: CNXXEV. APPLICATION: CN 1989-108043 19891028.

AB A new glass **fertilizer** is claimed, which comprises  
 phosphosilicate glass (contg. P2O5, SiO2, **CaO**, **MgO**  
 , Al2O3, Fe2O3, **Na2O**, and K2O) molten with rare earth  
 element compds. (e.g. La2O3, Nd2O3, CeO2, Pr6O11, Y2O3, Gd2O3,  
 Sm2O3) and trace element compds. (e.g. ZnO, MnO2, B2O3, CuO,  
**MoO3**). The glass **fertilizer** is useful for  
 ripening mushrooms, cucumbers, egg plants, apples, grapes and other  
 crops, increasing the crop yield, and improving the sugar content in  
 e.g. apples or grapes. The **fertilizer** is effective and  
 lasts longer.

IT **24401-73-8**, Molybdate  
 (glass **fertilizer** contg. phosphosilicate glass and rare  
 earth element compds. and)

RN 24401-73-8 HCA

CN Molybdate (MoO3) (9CI) (CA INDEX NAME)



IT **1305-78-8**, Calcium **oxide**, biological  
 studies **1309-48-4**, Magnesium **oxide**,  
 biological studies **1313-59-3**, Sodium  
**oxide**, biological studies  
 (in phosphosilicate glass, **fertilizer** contg. rare earth  
 element compds. and trace element compds. and)

RN 1305-78-8 HCA

CN Calcium oxide (CaO) (CA INDEX NAME)

Ca=O

RN 1309-48-4 HCA  
CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

RN 1313-59-3 HCA  
CN Sodium oxide (Na2O) (CA INDEX NAME)

Na-O-Na

IC ICM C05B017-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST glass **fertilizer** trace element manuf; rare earth glass  
**fertilizer** manuf; phosphosilicate glass trace element  
**fertilizer**  
IT Apple  
Cucumber  
Eggplant  
Grape  
Mushroom  
(phosphosilicate glass **fertilizer** contg. trace elements  
and rare earth elements for)  
IT Rare earth metals, compounds  
(compds., molten with phosphosilicate glass, **fertilizer**  
contg.)  
IT Glass, oxide  
(phosphosilicate, molten with rare earth element compds. and  
trace element compd., **fertilizer** contg.)  
IT **Fertilizers**  
(trace element, phosphosilicate glass- and rare earth element  
compd.-contg.)  
IT 1303-86-2, Boron oxide, biological studies 1313-13-9, Manganese  
oxide, biological studies 1314-13-2, Zinc oxide, biological  
studies 1317-38-0, Cupric oxide, biological studies  
**24401-73-8**, Molybdate  
(glass **fertilizer** contg. phosphosilicate glass and rare  
earth element compds. and)  
IT 1306-38-3, Cerium dioxide, biological studies 1312-81-8, Lanthanum  
oxide 1313-97-9, Neodymium oxide (Nd2O3) 1314-36-9, Yttrium  
oxide, biological studies 12037-29-5, Praseodymium oxide (Pr6O11)  
12060-58-1, Samarium trioxide 12064-62-9, Gadolinium oxide  
(glass **fertilizer** contg. phosphosilicate glass and

- trace element compds. and)
- IT **1305-78-8, Calcium oxide**, biological studies 1309-37-1, Iron oxide (Fe<sub>2</sub>O<sub>3</sub>), biological studies **1309-48-4, Magnesium oxide**, biological studies **1313-59-3, Sodium oxide**, biological studies 1314-56-3, Phosphorus pentoxide, biological studies 1344-28-1, Aluminum oxide, biological studies 7631-86-9, Silicon dioxide, biological studies 12136-45-7, Potassium oxide, biological studies  
(in phosphosilicate glass, **fertilizer** contg. rare earth element compds. and trace element compds. and)
- L36 ANSWER 13 OF 18 HCA COPYRIGHT 2009 ACS on STN 111:6482 Original Reference No. 111:1255a,1258a Multinutrient tobacco **fertilizer** manufacture and use. Teren, Jan; Hutar, Eduard; Tehlar, Jozef; Nosko, Vladimir; Vazny, Emil; Chromicky, Karol (Czech.). Czech. CS 239384 B1 **19870615**, 7 pp. (Slovak). CODEN: CZXXA9. APPLICATION: CS 1984-3336 19840507.
- AB A liq. or paste multicomponent **fertilizer** contg. basic and secondary growth nutrients and micronutrients, is designed as a **fertilizer** for tobacco. A multicomponent **fertilizer** contained N-Mg-S (N 13.8, **MgO** 5.7, S 4.5%) soln. 123.1, ammonium bis(ethylene glycol) borate (B-conc.) 16.2, Mn EDTA (Mn 2.4%) 36.45, Zn EDTA (Zn 4.0%) 10.63, ammonium molybdate citrate 0.43, Cu EDTA (Cu 4.7%) 9.08, Fe EDTA (Fe 2.35%) 53.2, K 3-indolylacetate 0.9, and concd. H<sub>2</sub>SO<sub>4</sub> 0.67 kg. At 20° its pH = 6.8 and d. = 1258 kg/m<sup>3</sup>. When applied to tobacco plants in a two-year study, it increased yields in every case.
- IT **1309-48-4, Magnesium oxide (MgO)**, biological studies  
(in multinutrient **fertilizer** for tobacco)
- RN 1309-48-4 HCA
- CN Magnesium oxide (MgO) (CA INDEX NAME)

Mg=O

- IC ICM C05D009-02
- CC 19-7 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 11
- ST metal element **fertilizer** tobacco
- IT Tobacco  
(multinutrient **fertilizer** for)
- IT **Fertilizer** experiment  
(with tobacco, multinutrient **fertilizer** for)
- IT **Fertilizers**  
(multinutrient, for tobacco)
- IT 7439-96-5D, Manganese, EDTA complexes 11098-84-3, Ammonium

**molybdenum oxide**

(**fertilizer** contg., for tobacco)

- IT 60-00-4D, iron and manganese complexes **1309-48-4**,  
**Magnesium oxide (MgO)**, biological  
 studies 2338-19-4 7439-89-6, Iron, biological studies  
 7439-89-6D, Iron, EDTA complexes 7439-89-6D, Iron, lignosulfonate  
 complexes 7439-96-5, Manganese, biological studies 7439-96-5D,  
 Manganese, lignosulfonate complexes 7439-98-7, Molybdenum,  
 biological studies 7440-23-5, Sodium, biological studies  
 7440-42-8, Boron, biological studies 7440-50-8, Copper, biological  
 studies 7440-50-8D, Copper, lignosulfonate complexes 7440-66-6,  
 Zinc, biological studies 7440-66-6D, Zinc, lignosulfonate  
 complexes 7487-88-9, Magnesium sulfate, biological studies  
 7632-50-0 7664-93-9, Sulfuric acid, biological studies  
 7704-34-9, Sulfur, biological studies 8062-15-5D, Lignosulfonic  
 acid, metal complexes 12519-36-7, Zinc EDTA 51395-10-9, Copper  
 EDTA 102802-02-8, Ammonium bis-ethyleneglycolborate  
 (in multinutrient **fertilizer** for tobacco)

L36 ANSWER 14 OF 18 HCA COPYRIGHT 2009 ACS on STN

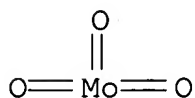
109:229586 Original Reference No. 109:37969a,37972a Glass-like  
 substances as **fertilizers** and pesticides for hydroponics..  
 Matoba, Shigekimi (Asahi Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo  
 Koho JP 63084428 A **19880415** Showa, 4 pp. (Japanese).  
 CODEN: JKXXAF. APPLICATION: JP 1986-229949 19860930.

AB Glass-like substances for plant culture contain P2O5 4-47 and R2O (R  
 = Na or K) 4-47 mol %, the dissocn. rate in H2O being 2-300 mg/cm2.  
 Materials contg. P2O5 38, **Na2O** 38, **MgO** 4,  
**CaO** 12, CuO 7.9, and MnO 0.1 mol % were mixed, heated at  
 1000-1100°, and vitrified. The glass-like substances were  
 degraded to granules (av. diam. 5 mm); the dissocn. rate in H2O was  
 2.5 mg/cm2. The 1000 g glass-like substance was added to 1000 L  
 H2O, and a K **fertilizer** was blended into the mixt.  
 Tomatoes were grown in this medium and the H2O was changed every 10  
 days. The glass-like substance was washed with H2O, and reused with  
 other **fertilizers**. No microbial growth was obsd. in the  
 culture medium.

IT **1313-27-5, Molybdenum trioxide**,  
 biological studies  
 (glasslike **fertilizers** and pesticides contg.)

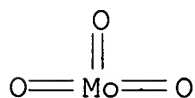
RN 1313-27-5 HCA

CN Molybdenum oxide (MoO3) (CA INDEX NAME)



- IC ICM A01G031-00
- ICS C05B017-00
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 5
- ST glasslike **fertilizer** pesticide hydroponics
- IT Glass, oxide  
(**fertilizers** and pesticides)
- IT Oxides, biological studies  
(glasslike **fertilizers** and pesticides contg.)
- IT Hydroponics  
(glasslike **fertilizers** for)
- IT Pesticides  
**Fertilizers**  
(glasslike substances as)
- IT 1303-86-2, Boron trioxide, biological studies 1307-96-6, Cobalt  
monoxide, biological studies **1313-27-5**,  
**Molybdenum trioxide**, biological studies  
1317-38-0, Copper monoxide, biological studies 1344-43-0,  
Manganese monoxide, biological studies 7439-96-5, biological  
studies 7439-98-7, biological studies 7440-42-8, biological  
studies 7440-48-4, biological studies 7440-50-8, biological  
studies  
(glasslike **fertilizers** and pesticides contg.)
- L36 ANSWER 15 OF 18 HCA COPYRIGHT 2009 ACS on STN  
108:93682 Original Reference No. 108:15403a,15406a Glass-based  
**fertilizers**. (Isover Saint-Gobain, Fr.). Jpn. Kokai Tokkyo  
Koho JP 62148337 A **19870702** Showa, 12 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1986-299068 19861217. PRIORITY: FR  
1985-18672 19851217.
- AB The glass products for agricultural uses contain nutrients which are  
absorbed by roots, such as mineral elements and trace elements.  
Glass fibers were produced from a glass contg. SiO<sub>2</sub> 40.10, P<sub>2</sub>O<sub>5</sub>  
6.50, K<sub>2</sub>O 16.80, **CaO** 15.30, **MgO** 4.90, SO<sub>3</sub> 0.10,  
Fe<sub>2</sub>O<sub>3</sub> 0.12, ZnO 0.23, CuO 0.09, **MoO<sub>3</sub>** 0.03, **Na<sub>2</sub>O**  
0.07, and Al<sub>2</sub>O<sub>3</sub> 4.90%. The nutrients were leached out with an NH<sub>4</sub>OAc  
soln.. The leachate contained P<sub>2</sub>O<sub>5</sub> 3.50, K<sub>2</sub>O 1.29, **CaO**  
4.05, **MgO** 0.45 g/kg, Fe<sub>2</sub>O<sub>3</sub> 22.9, and MnO 5.0 mg/kg.
- IC ICM C03C003-097
- ICS C03C004-00; C03C013-00; C05D009-00; C05G001-00
- CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
Section cross-reference(s): 57
- ST glass fiber slow release **fertilizer**; trace element glass  
fiber **fertilizer**; mineral element glass fiber  
**fertilizer**
- IT Glass fibers, biological studies  
(**fertilizers**-contg., slow-release)
- IT Trace elements, biological studies

- (glass fiber contg., as slow-release **fertilizer**)
- IT **Fertilizers**  
(phosphorus-potassium-trace element, sustained-release, glass fibers)
- IT 7440-09-7 7723-14-0  
(**fertilizers**, phosphorus-potassium-trace element, sustained-release, glass fibers)
- IT 7439-89-6, biological studies 7439-95-4, biological studies  
7439-96-5, biological studies 7439-98-7, biological studies  
7440-50-8, biological studies 7440-66-6, biological studies  
7704-34-9, biological studies  
(glass fiber contg., as slow-release **fertilizer**)
- L36 ANSWER 16 OF 18 HCA COPYRIGHT 2009 ACS on STN  
99:211705 Original Reference No. 99:32569a,32572a Depot  
**fertilizers** and their use. Brunn, Horst; Niggemann, Johannes; Koehler, Peter; Hund, Franz (Bayer A.-G. , Fed. Rep. Ger.). Ger. Offen. DE 3212537 A1 **19831013**, 75 pp.  
(German). CODEN: GWXXBX. APPLICATION: DE 1982-3212537 19820403.
- AB The depot **fertilizers** consist of an inorg. matrix and a 2nd inorg. and(or) org. component of general formula:  
 $x\text{Me(II)}\text{O} \cdot (1-x)/2 \text{Me(III)}_2\text{O}_3 \cdot y\text{A} \cdot z\text{I} \cdot \text{aq}$ , where Me(II) and Me(III) are  $\geq 1$  di- and trivalent metals, A is  $\geq 1$  inorg. acid or anhydride, I is  $\geq 1$  org. compd., aq is 0-9 H<sub>2</sub>O or 0, 5-6 H<sub>2</sub>O, x and y are nos., with  $x = 0-1$ , z is 0.2-0.9, and  $\geq 1$  of the components is a plant nutrient. Thus, to 192.3 g Mg(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O dissolved in 1500 mL H<sub>2</sub>O, a soln. contg. 400 g Al(OH)<sub>3</sub> and 10.4 g NaOH/L is added and the mixt. is stirred for 15 min. Thereafter the pH of the mixt. is brought to 8.5 by addn. of either HNO<sub>3</sub> or NaOH. The suspension is further stirred for 5 h, dried, and ground. The soln. system contains MgO 23.7, Al<sub>2</sub>O<sub>3</sub> 20.3, N<sub>2</sub>O<sub>5</sub> 19.5, and H<sub>2</sub>O 36.2 wt.%, satisfying the above equation.
- IT **1313-27-5**, biological studies  
(in depot **fertilizers** contg. di- and trivalent models manuf.)
- RN 1313-27-5 HCA  
CN Molybdenum oxide (MoO<sub>3</sub>) (CA INDEX NAME)



- IC C05G001-00  
CC 19-6 (Fertilizers, Soils, and Plant Nutrition)  
ST **fertilizer** depot manuf  
IT **Fertilizers**  
(depot, contg. di- and trivalent metals, manuf. of)

- IT Humic acids  
(in depot **fertilizers** contg. di- and trivalent models  
manuf.)
- IT 77-92-9, biological studies 139-33-3 1302-42-7 1305-62-0,  
biological studies 1309-42-8 1310-73-2, biological studies  
**1313-27-5**, biological studies 1330-43-4 7447-39-4,  
biological studies 7646-85-7, biological studies 7697-37-2, uses  
and miscellaneous 7720-78-7 7758-94-3 7773-01-5 8061-51-6  
10043-01-3 10043-35-3, biological studies 10377-60-3  
10421-48-4 12027-67-7 13473-90-0 14402-89-2 21645-51-2,  
biological studies  
(in depot **fertilizers** contg. di- and trivalent models  
manuf.)
- L36 ANSWER 17 OF 18 HCA COPYRIGHT 2009 ACS on STN  
94:138555 Original Reference No. 94:22695a,22698a High-manganese foliar  
**fertilizers** using manganese ores. Pentek, Istvan; Puch,  
Jozsef (Vasipari Kutato Intezet, Hung.). Hung. Teljes HU 18677  
**19800828**, 21 pp. (Hungarian). CODEN: HUXXB. APPLICATION:  
HU 1977-VA1515 19771223.
- AB Foliar **fertilizer** concs. contg. N 5-25, K 0.5-10.0, Na  
0.02-4.0, **MgO** 0.1-9.0, B 0.05-0.5, Mn 0.1-2.0, Cu  
0.05-0.6, Zn 0.01-0.55, Fe 0.05-6.0, Co 0.001-0.01, Mo 0.05-0.1,  
SO<sub>4</sub><sup>2-</sup> 1-25, and NH<sub>4</sub><sup>+</sup> 1-7% were prepd. by H<sub>2</sub>SO<sub>4</sub> and(or) HNO<sub>3</sub>  
treatment of Mn ores or mixts. of Mn, Zn, Cu, and(or) Mo ores or  
wastes, neutralization of the filtered mixt. contg. 50-150 g Mn/L  
with NH<sub>4</sub>OH, KOH, NaOH, Ca(OH)<sub>2</sub>, and(or) Mg(OH)<sub>2</sub> to a Mn concn. of  
5-20 g/L, removal of the Mn ppt., and treatment of the filtrate with  
B, N, Cu, Zn, Mo, and chelate-forming compds. Thus, a mixt. of 100  
kg Mn ore contg. Mn 16.24, Fe 10.50, SiO<sub>2</sub> 22.50, Al<sub>2</sub>O<sub>3</sub> 4.32,  
**CaO** 5.02, **MgO** 4.62, S 0.06, P 0.36, Ti 0.14, K  
1.48, and Co 0.0025% and wastes contg. ZnO 0.235, CuO 0.575, and  
**MoO<sub>3</sub>** 0.16 kg (particle size ≤0.1 mm) was treated with  
46.9 L concd. H<sub>2</sub>SO<sub>4</sub>; the product was heated 1 h at 700°,  
treated with 200 L H<sub>2</sub>O, and filtered. The filtrate was treated with  
NH<sub>4</sub>OH and CO<sub>2</sub> and filtered, and the filtrate treated with Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub>  
3.44, urea 2.24, and chelating agents to give a title conc. contg. N  
14, Fe 0.62, K 0.08, Na 0.05, **MgO** 1.7, B 0.205, Cu 0.248,  
Mo 0.05, Zn 0.082, Mn 1, Co 0.001, PO<sub>4</sub><sup>3-</sup> 0.043, NH<sub>4</sub><sup>+</sup> 4.66, and SO<sub>4</sub><sup>2-</sup>  
18.9%.
- IC C05D009-021; A01N017-08  
CC 19-5 (Fertilizers, Soils, and Plant Nutrition)  
ST manganese rich **fertilizer** ore waste; multinutrient  
**fertilizer** manganese ore  
IT Manganese ores  
(**fertilizer** manuf. from, multinutrient foliar)  
IT Wastes  
(trace element-contg., in **fertilizer** manuf.)



IT **Fertilizers**

(multinutrient, manganese-rich foliar, from manganese ores)

IT 7439-96-5P, preparation

(**fertilizers** rich in, manuf. of foliar)

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51:44803 Original Reference No. 51:8355e-g Seed planting composition.

Clawson, Clinton D. (Ferro Corp.). US 2785969 **19570319**

(Unavailable). APPLICATION: US .

AB A method is described for making a preformed block composed of plant foods, carrier, and binder. The top surface of the block is provided with depressions or grooves for the placement of seeds. A mixt. of paper 8, peat moss 12.5, fritted plant foods (I) 10, exfoliated mica 91.4, and urea-formaldehyde resin 2 is slurried with H<sub>2</sub>O, molded into blocks, and dried. Seeds are placed on the depressions or grooves, and the whole is placed in the soil. I is composed of Fe<sub>2</sub>O<sub>3</sub> 3.5, MnO<sub>2</sub> 0.1, CuO 0.04, ZnO 0.05, B<sub>2</sub>O<sub>3</sub> 0.15, **MoO<sub>3</sub>** 0.006, SiO<sub>2</sub> 37.10, **CaO** 18.00, **MgO** 1.6, K<sub>2</sub>O 21.10, and CoO 0.003%.

CC 15 (Soils and Fertilizers)

IT **Fertilizers**

(in seed planting compn.)